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THE AUTOMOBILE

DETROIT GIVES GLIDDENITES ENTHUSIASTIC SEND-OFF

Mayor Breitmeyer Fires the Starting Guns

Where Start was made from, Hotel Pontchartrain.

Detroit The City Beautiful.

DETROIT, July 12—To the fanfare of trumpets (supplied by the Maxwell-Briscoe band), the booming of cannon (touched off by Mayor Breitmeyer), and the waving of banners (done by the hospitable citizens of this automobile-making town), the sixth tour of the American Automobile Association had a vociferously successful beginning at 10 o'clock this momentous July morning. Forty-two cars were soon on their way, two having preceded the main body: Pilot Dai Lewis with the confetti and Chairman F. B Hower in the pacemaker's role. Thirteen are contenders for the individual temporary possession of the Charles J. Glidden trophy; fourteen are seeking ownership of the Hower cup; and only three are rivals for the beautiful Detroit prize. The remaining dozen are divided into official, press and general supply cars.

Chairman Hower Departs from Official Headquarters

Exactly as the city hall clock in Campus Martius began the tolling of the hour of ten the indefatigable burgomaster, Breitmeyer, discharged the cannon which sent away the first of the contestants that had been lined up by "Fergy," an essential of Glidden Trophy tours. The thousands that filled the big square cheered and shouted and waved flags as No. 100 Moline of the Dreadnaught trio, jumped away on across the campus under the skillful handling of C. H. Van Der Voort. This car and the thirteen that followed at minute intervals were the runabouts involved in the Hower event.

Of course Dwight Huss with his little Brush received a hearty sendoff, for not a few remembered that he was one of the pioneer trans-continentalists. The Chalmers-Detroit Bluebird, with Machasky at the helm, came in for recognition, while another later local product, the Hupmobile, driven by Stineman, called for local enthusiasm. As Goldthwaite's Maxwell began the long journey the Maxwell-Briscoe band supplied the music. "Jack" Williams with the Pierce-Arrow was a second time contender for the Hower trophy, he having been one of the tied participants a year ago. The McIntyre, handled by Goodwin, was a starter of the buggy-about type that attracted unusual notice in such fast company. Following it were three other new faces in the Jewel of Massilon, O.; the Mason of Des Moines, Ia.; and the Lexington from Kentucky. The performances of these newcomers will call for observation.

Then came the battlers for the Glidden, the first of the touring cars being a Premier with Webb Jay, well known in track and road contests, in the driver's seat. Cheers greeted his departure, for he is a familiar figure in Detroit. It was perfectly natural that the Chalmers-Detroit Bluebird, Bolger driving, elicited the shouts of the multitude. Howard Marmon, with a car of the same name and Frank E. Wing with its companion, were two promising candidates who have competed before. The E-M-F trio were scratched, and explanations vary as to the exact reason. One story relates to a difference of opinion involving Pelletier and Hower; another explanation relates to the recent sale to the Studebaker company. Perhaps both stories are more or less correct. A Maxwell from Tarrytown, Gager driving, was the sixth tourer, and after him started Bernhart and a sturdy looking Jewel. "Teddy" Day and his Pierce-Arrow are familiar figures in Glidden contests, while Walter Winchester, with another Pierce Six, added to the possibility that the trophy might find its way to Buffalo for the fourth time. The Glide from Peoria figured next, after which was the Thomas Six that had Gus Buse, Jr., again on the job, but W. F. Buse had been unable to accompany him as usual. The midland from Moline and Hayes made the twelfth combination, with a White steamer of the kerosene burning variety—the thirteenth starter for the Glidden, H. N. Searles, a newcomer in competition, handling the entry of Walter White.

The trio of baby tonneauites appearing for the Detroit trophy

"Westward, Ho!" the Long Cavalcade Wended Its Way Out Michigan Avenue on Its 2,500-Mile Journey

consisted of the two-cycle American Simplex from Indiana, Woods driving; a Chalmers-Detroit handled by Jean Bemb, and the Premier entry of H. O. Smith.

The press, official, and supply cars, including a Rapid truck, brought up the remainder of the starters.

Chairman Hower started some twenty minutes ahead of the first car of the three competitions, and his departure was marked by some pleasing festivities. Mrs. H. H. Hower, the recent bride of his nephew, presented the National colors to the chairman, the band supplied the "Star Spangled Banner," and the multitude added the hurrahs. Mr. Glidden and Alfred Reeves rode in the chairman's Premier driven by Ray McNamara.

FIRST DAY—DETROIT TO KALAMAZOO

(142.2 Miles)

KALAMAZOO, July 12—Dust was the most prominent feature of the 142.2 miles journey from Detroit here. One has fragmentary recollections of waving fields of golden grain ready for the reaper, of green acres for the later crop, and of people scattered along the roadside waving flags and handkerchiefs and shouting words of encouragement. Now and then the hard working agriculturist would be observed underneath shady trees, from which vantage ground occasionally he exerted himself sufficiently to wave his hat.

But what Michigan offered to-day in the way of roads told a story of backwardness which the coming of the automobile will change considerably in the next few years. Occasionally there were passable stretches, but for the most part it was a case of dust-eating and shifting sandy roads. Until the contestants had become pretty well scattered the dust nuisance was abominable, and was again repeated towards the finish when the cars bunched, for the schedule gave slight trouble to most of the cars.

Hardly had the contesting tourists reached the open country outside of Detroit when they realized that the run before them was no ordinary one. Roads were seen that have little right to bear such a dignified name, for they were rough, sandy, full of holes, and of such a texture as to stick assiduously to the faces and khaki suits of those in the cars. Then there was an omnipresent heat which made itself known long before the cannon started each contestant. Once during the afternoon a slight rain occurred, but it was not of sufficient amount to cause inconvenience. Indeed, if it had rained harder the convenience of those riding in the blinding cloud of Mother Earth might have been considerably increased.

Out Michigan avenue the cars sped, past the baseball grounds which had been a stamping grounds of many of the participants during the post-Glidden stay in the city. Over railroads, under them, following trolley lines, and crossing bridges took the attention of those following the "spaghetti," until the straight roads to the West were reached. And as it became apparent that the route would be a hard one also followed the realization that the

Messrs. Hower, Spear, Elliott and Trophy Donor Glidden

Detroit Turned Out En Masse to Do Honor to the Departing Tourists, Giving Them an Enthusiastic Send-Off

tour was attracting unlimited attention along its route—especially so for the initial day. Every city, town, and hamlet turned out en masse, and there was little work accomplished while the Gliddenites were performing. The country folk along the route seemed to regard the tour as a good substitute for the annual circus. They gathered in front of every farm-house, to the third and fourth generation, and cheered the contestants with a fine impartiality.

Enthusiastic Spectators Supply Refreshments.

Jackson scored first in the intermediate stages of the tour, for there was a real live reception awaiting the travelers in the home of the Jackson automobiles. The chamber of commerce took charge, and as each machine appeared its occupants were supplied with solid and liquid refreshments for themselves, and gasoline, oil, and water for their cars. The lunch was well received, for it was at an opportune time and the courtesy of free supplies was appreciated far more than the mere value of those furnished. Messrs. Holmes, Lewis, and Mathews of the Jackson Company were assisted in welcoming their friends of the trade by Alfred Reeves, who stopped off to furnish any necessary introductions. Ypsilanti, Ann Arbor, Chelsea, Albion, Marshall, Battle Creek, and Galesburg stopped work and society events for the two or three hours in which they were visited by the flying Gliddenites.

This was the pleasant part of the day, rather the most pleasant, for withal these journeys are enjoyed by the participants. The business part was slightly more strenuous. Sand is not relished by autoists, and an abundance of this material was seen between Detroit and the Celery City. It was not in any one section, but entirely covered the route, and there were not more than a score of good miles.

But the big cars were only inconvenienced by the slipping and sliding. The small cars had some difficulty, especially those which received penalties. The fact that the little single-cylinder Brushes were started and intend to run to the finish, disregarding any excessive penalties, has won the admiration of the other contestants, and all courtesies are extended to them. The McIntyre buggyabout is also running to finish rather than to make a perfect score, and the roads of the day were the kind it is built for, but fast speed is not possible upon them. The sand caused the drivers to use their gears.

So with a consistent condition of the highways, and a steady procession of the cars, the occupants took glimpses of scenery through the dust. The Michigan Central tracks were given due attention, for they were crossed 30 times at grade, and there was a high-speed trolley line to watch. This State is not of the same topography as some crossed in recent tours, but its waving grain fields, views of the Kalamazoo and other rivers, and of substantial farms, were pleasing vistas.

Scheduled Speed Runs Close to Legal Limit.

The speed schedule to-day was as close to the 20 mile an hour limit as it was possible to make. The Class A cars, which sell from $3,751 up, ran on a 19.8 mile an hour schedule, which gave them 7 hours 10 minutes for the 142 miles. According to the rules when the running time of the Class A cars is seven and a half hours or less, there are ten minutes added to this running time for Class B, being cars listed from $2,451 to $3,750 inclusive. This made the running time for this class 7 hours 20 minutes or 19.3 miles per hour. In Class C, cars listing from $1,751 to $2,450 inclusive, the running time was 7 hours 30 minutes, or 18.9 miles per hour. For Class D cars, $1,000 to $7000 inclusive the time was 7 hours 40 minutes, or 18.5 miles per hour. The small cars, Class E, $999 and under, had 7 hours 50 minutes, giving a schedule of 18.1 miles per hour.

Before the start this morning each entrant was handed an envelope containing a list of penalties that will be imposed at the final technical examination in Kansas City: for sag in the frame, set of the front wheels, set of the rear wheels and springs. Considerable anxiety was occasioned when it was expected by some that the tour would start without the contestants actually knowing the amount of these penalties, but the committee formulated a complete schedule covering these points, as follows:

FRAMES

Sagged up to 1-2 inch	No penalty
Over 1-2 inch, up to and including 3-4 inch	10 points
Over 3-4, up to and including 1 inch	30 points
Over 1 inch, up to and including 1 1-4 inch	70 points
Over 1 1-4 inch, or broken frame	150 points

SET OF FRONT WHEELS

Up to and including perpendicular	No charge
For inclination inward from the perpendicular up to and including 1-2 inch	5 points
For inclination inward from the perpendicular exceeding 1-2 inch, up to and including 1 inch	15 points
For inclination inward from the perpendicular beyond 1 inch	35 points

SET OF REAR WHEELS

Up to and including perpendicular	No charge
For inclination inward from the perpendicular up to and including 1-4 inch	5 points
For inclination inward from the perpendicular exceeding 1-4 inch up to and including 1-2 inch	15 points
For inclination inward from the perpendicular beyond 1-2 inch	35 points

SPRINGS

Unless broken	No penalty

Penalties Force Three from Perfect Score Class.

The three cars to suffer penalties to-day were No. 3, Chalmers-Detroit, driven by William Bolger in the Glidden class. It broke a fender iron and penalized one point, .6 for material and .4 for two minutes labor. Two perfect scores dropped in the Hower ranks, the first being No. 104 Brush Runabout, driven by F. A. Trinkle, which burned out a connecting rod bushing and received a total penalty of 6.5 points for work and .3 for material, a total of 6.8. The trouble arose because of breaking off the scoop on the lower end of the connecting rod which dips into the oil splash and thereby forcing oil through a duct in the scoop to the lower connecting rod bearing. In all one hour and fifteen minutes were required for the work. With the McIntyre Motor Buggy No. 110 the twenty-nine penalties were for lateness checking in at the night control, the car being thirty-one minutes behind, two minutes of which are allowed free and a penalty of one point per minute imposed for the remainder.

SECOND DAY—KALAMAZOO TO CHICAGO

(173.3 Miles)

CHICAGO, ILL., July 13—'Twas a tired and dusty cavalcade that loafed down Michigan avenue this afternoon at half past three o'clock and thankfully completed the second day's run of the big tour. No insuperable difficulties were encountered in the 173.3 miles run from Kalamazoo, but the roads were more often bad than good, and the dust could not possibly have been worse.

To-day's route lay through Paw-Paw, Decatur, Dowagiac and Niles in Michigan; Indiana supplied South Bend, Laporte, Valparaiso, Hobart and Hammond. Illinois was mainly Chicago, except where it was South Chicago. Decatur furnished the first outburst of enthusiasm, having stretched across the street a sign: "We hope you will win." The inhabitants of Niles seemed pleased with the visit, and their asphalt streets were tempting to the men at the wheels, but a series of bumps kept the passengers in the air half of the time. The townsfolk of New Carlisle, Ind., would have liked to have seen some speedy work, but unfortunately they forgot to take down certain signs on the outskirts which read "Speed limit 8 miles per hour." Most of the tourists respected it, probably for the sake of irony.

The first sight of macadam highways—here called "hard roads"—was obtained at Laporte, but this welcome relief lasted only a quarter of a mile. After a few miles' intermission, at Pine Hook another section four miles long began. At South Bend the Studebaker Company hospitably supplied refreshments to both engines and men. J. M. Studebaker watched the proceedings. Beyond Westville the good roads began again, and lasted—as a rule—into Chicago. But just for variety's sake there were left several short plugs through sand, ruts and hidden mud holes. The route through South Chicago lay over an extremely rough

block pavement, although a smooth asphalt boulevard ran parallel but one block away from the route that was chosen.

A number of Chicago automobilists met the caravan at some distance from the city and escorted it to the finish. Michigan avenue was packed with automobiles in honor of the affair. To-night the Chicago Motor Club and the Chicago Automobile Trade Association will extend the glad hand of welcome to the passing tourists, in the way of an informal "Dutch luncheon" at the New Southern Hotel. The invitations included the satisfying advice, "Wash for high neck only."

Although all the highways on to-day's route furnished sufficiently bad conditions to make the run a severe test, they had little immediate effect upon those in the caravan. As on yesterday's journey the "mosquito fleet" was the heavy sufferer. The big fellows and the medium-priced division found little to worry them during the progress of the journey westward.

One exciting incident occurred just after passing Westfield, Ind. In endeavoring to get around a hay wagon, the Rapid truck which bears the insignia of the Firestone Tire Company slid bodily into a ditch. The car was tilted at none too safe an angle when Chairman Hower in the pacemaking Premier arrived on the scene, followed by a score of doughty contestants. The Chalmers-Detroit press car furnished a block and tackle, and McIntosh's Studebaker press car coupled up to pull the truck out backwards. That direction did not suit, so the contestants were permitted to go ahead while the squad of non-contestants remained behind to do the work. The Thomas car used by the representatives of THE AUTOMOBILE and *Motor Age* was used as an anchor for one of the pulleys; Secretary Ferguson's Acme took the free end of the rope, and with a dozen sturdy newspaper men holding the truck from falling, the Acme drew ahead and landed the truck on terra firma.

About ten miles further on the Acme slewed off the road while rounding a sharp curve and headed straight for the ever-present telegraph pole. However, the driver got it under control quickly enough to avoid any worse disaster than the slight bending of a mud-guard, slight damage which was very quickly remedied.

The same Brush penalized yesterday had extra demerits added to-day, because of the lateness occasioned by work necessary to fit the connecting-rod bearing better than the hasty effort on the first day permitted. The McIntyre high-wheeler had to go slow on the rough roads and had its penalties increased by lateness in checking. The other Brush driven by Trimble received four-tenths of a point for tightening a front wheel bearing cone. Chalmers No. 3 was penalized four-tenths of a point for tightening its loose fender. The Hupmobile had no trouble negotiating the sand and bumps and came in with time to spare.

The new ruling permitted cars to check in ahead of time has proved very satisfactory. By this regulation the cars need not stand in the hot sun after their arrival, while the drivers, mechanics and observers disconsolately wait for their baths. On the last ten miles to-day many cars had to replace tires on account of punctures from long nails that had fallen out of planks used in temporary street repairs. No penalties were incurred from this cause, as everybody was so far ahead of time that the slight delay did not matter. To-day showed a marked tendency toward more conservative driving. The entrants have worked off their first burst of exuberant spirits and settled down to steady plugging. The run to-morrow opens to A. A. A. touring contests the field of the great Northwest, the route being to Madison, Wis., through the automobile manufacturing cities of Kenosha and Racine.

"The Automobile" Press Car Makes Its Departure, Filled with Representatives of the Editorial and Business Staffs

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Talk of a Transcontinental Run for 1910—It is quite probable now, so it is said, that American makers, drivers and motorists in general will have their fondest wish gratified, as a transcontinental tour for 1910 is all the talk among the tourists. This will postpone the proposed tour of England, but with so great a field unsupplied in America and the factories working overtime to supply part of the demand, it would seem about the proper caper to cross America and learn the United States thoroughly before entering new fields.

ABOUT CARS WHICH ARE COMPETING FOR TROPHIES

DETROIT, July 11—The thirty cars entered for the Glidden, Hower and Detroit trophies were turned over to the contest committee Friday afternoon and parked in the square opposite the Pontchartrain Hotel. Here Secretary Ferguson was in charge, and Joseph Tracy of road racing fame and C. S. Ricker constituted the technical committee. This committee began its arduous task of measuring the frames and axles of the cars early Saturday, and although they continued all day a 6 o'clock start was necessary on Sunday to complete the work.

Examining the Contesting Cars Diagrammatically—The scheme for checking mechanical faults, if they develop in the contesting cars in the Glidden tour, as worked out by the technical committee, composed of Jos. Tracy and Henry Souther, is shown in the accompanying figures. The indicated measurements were made and noted by the committee, one set for each car, at Detroit, before the cars started on the run, and when the cars reach Kansas City, at the end of the run, like measurements will be made, and noted down along side of the original measurements, in the figures and space afforded for the purpose.

If the running gear at any point, of any of the cars, deforms, the amount of deformation will show by a difference in the measurement designated as X, Fig. 1, and duplicated in Fig. 2 In order to determine the deformation within close limits, four measurements will be available for each car, before and after the run, and the committee will decide as to the mean of the measurements as taken. Likewise, the chassis frame and springs will be measured, at points as indicated by letters and figures noted in Fig. 3 and duplicated in Fig. 4, as follows:

(A) Set of front springs.
(B) Set of hind springs.
(1) Set of front end of chassis frame in the vertical plane of the front axle.
(2) Set of chassis frame at a point just back of rear anchorage of front springs.
(3) Set of chassis frame at a point just in front of front anchorage of hind springs.
(4) Set of chassis frame in vertical plane of hind axles.
(5) Set of chassis frame as measured at after fastenings of hind springs, relative to datum line shown.

The final conclusions of the committee, after closely examining the data that should result from this well-devised plan, will be of the greatest value to designers, in future, besides telling a story of to-day.

There is nothing in the rules as to what penalties will be imposed for variations in these several measurements at the completion of the run as compared with those made at the start, but it is expected some announcement regarding this will be made before the tour has been completed, at least, the competitors are all anxiously awaiting it.

Most of Cars Are 1909 Models—The majority of the competing cars in this tri-trophy contest are 1909 models, with a few of the 1910 improvements added in some cases, and in others new 1910 models are used.

The Pierce-Arrow entry of four cars is conspicuous in that all are six-cylinder types. The two Hower entries are 36-horsepower machines with 4 by 4 3-4-inch cylinders, these being the same as this year, excepting the bore is raised from 3 15-16 to 4 inches. The brake drums are wider and of greater diameter and the drum is a steel stamping instead of a steel casting used heretofore. All types of Pierce-Arrow cars for next year will use Timken roller bearings in the front wheels as well as at the outer ends of the rear axles, annular ball bearings being used in the other parts of the rear axle and the transmission.

The two Pierce-Arrow Glidden entries are 48-horsepower machines with 4 1-2 by 4 3-4-inch cylinders, the same size as used this year. These cars now use larger brakes and brake drums made from steel stampings; three-quarter elliptic springs have superseded the semi-elliptics, and the rear tires have been increased from 36 to 37 inches in size. Important on both Glidden and Hower entries is bringing the front axle forward to the radiator plane, which has resulted in increasing the wheelbase of the "48" from 130 to 134 1-2 inches.

The three contending Premier cars are 1910 models, the two contesting for the Glidden and the one for the Hower being identical chassis. The three have motors with 4 1-2 by 5 1-4-inch cylinders. This year the stroke was 4 1-2 inches, although of late many of the 5 1-4-inch size have been shipped. In all other respects the cars are 1909 in calibre and have a few refinements added. One thing noted is the locking of the radiator caps by means of short chains and miniature padlocks. The fitting of these locks precludes any possibility of tampering with the cooling water, which will be a considerable factor on the part of the tour west of Omaha. All of these cars are double-headed with speedometers carrying the Stewart and Warner instruments.

The three Moline entries in the Hower ranks are 1910 machines, which are practically the same as the present year models. All three are alike in every detail and are four-cylinder types with 4 1-2 by 5-inch four-cylinder motors and 117-inch wheelbase. These cars are not carrying any spare parts, the Moline company not even taking additional spark plugs.

The three Chalmers-Detroit cars are all exactly alike, being of the 40-horsepower class, with 5 by 4 3-4-inch cylinders and four-cylinder motors. They are strictly 1909 types, excepting that 1910 Mayo radiators

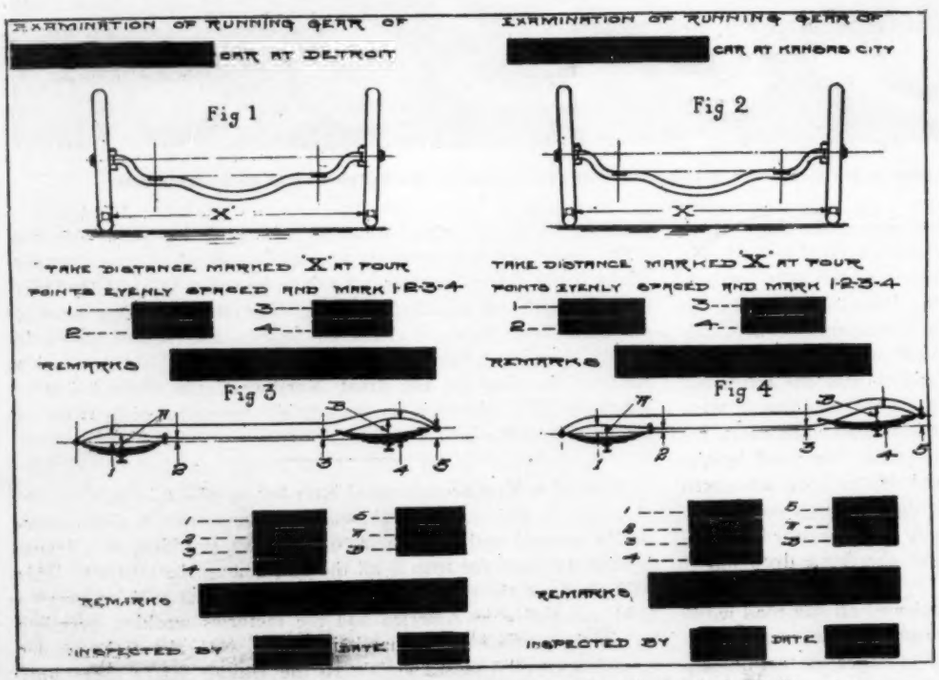


Chart Provided for Determining and Comparing Mechanical Faults

are being used. Of the three cars one competes in the Glidden, one in the Hower, and one in the Detroit competition.

Two Maxwell cars are contending, one in the Glidden and one in the Hower. Both chassis are identical. The four-cylinder motors have cylinders 4 1-4 inches square, the wheelbase is 104 inches, all springs are wrapped, and Ajax anti-skid tires used.

Nos. 4 and 5 in the Glidden are 1909 model 32 Marmons, familiarly known as the Marmon small car, of which the four cylinders are 4 1-2 inches square and the wheelbase 112 inches. Both chassis are alike and not a feature other than used on this year's model appears. In these cars the transmission is a unit with the rear axle.

Kerosene Fuel Will Be Used on the White—But one White steamer is competing, and it is a 1909 model with the new 1910 engine; in fact, the chassis, excepting the engine, is the same one as driven by Walter White in the recent Harrisburg four-day reliability run. Chiefly conspicuous in this car is the use of kerosene for fuel. Walter White announces that with kerosene the economy is from 15 to 25 per cent. greater than with gasoline. The car is not entirely a kerosene affair, because 3 gallons of gasoline are carried for pilot light.

The Mason entry in the Hower field is a two-cylinder 1909 Mason car, characterized by planetary gearset and single chain drive. A novelty in the 5 by 5-inch motor is casting the intake manifold integral with the cylinders and crankcase, so that the carbureter appears to be sitting on the side of the crankcase. Nothing special is fitted to this car for the tour, the springs not being wrapped nor are shock absorbers fitted. The car has 112-inch wheelbase.

The American Simplex in the toy tonneau class for the Detroit trophy is the only two-cycle car in the tour. It has a four-cylinder motor, 5 by 5 inches bore and stroke, rated at 50-horsepower. Its transmission and drive are conventional, the former being in the rear axle housing. Inasmuch as it is the first two-cycle car to compete, its actions will be watched with added interest.

Giant and Pigmy, Only Double Chain Drives—There are four cars with double side chain drive, and, strange to say, they are the largest and the smallest. The six-cylinder Thomas of 70-horsepower is contrasted with two single-cylinder Brushes of 7-horsepower and the two-cylinder McIntyre of 16. This big Thomas is the same one which competed last year, and it has traveled over 16,000 miles already. Gus G. Buse, Jr., will be at the wheel as formerly, but his father is missing his first Glidden tour in several years.

The little Brushes are new—just fresh from the factory—and their details of construction are well known—1-cylinder, 7-horsepower engine—double chain drive. They are the only cars without magnetos. The entrants and crews do not expect to get through without penalization, but they absolutely expect to be at the finish. If they are able to do this due credit will be given.

Only One High Wheeler—The McIntyre is particularly distinctive for several reasons. It is the only entrant of the buggy type—so popular in the territory to be covered; it is the only two-cylinder car, and the only one with solid tires. It has a 16-horsepower motor and double-chain drive.

The Midland car is another newcomer. It is standard in construction—four cylinders, selective transmission and shaft drive.

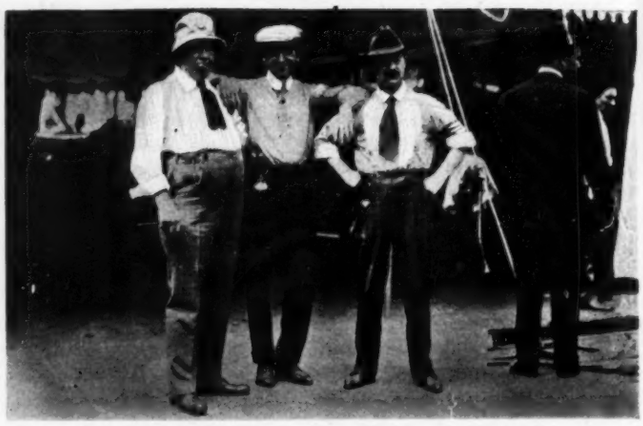
The Glide is one of the big touring cars of 45-horsepower, with a four-cylinder motor. It is being driven by A. Y. Bartholomew, one of the few factory officials at a wheel. The Lexington is making its début in Northern circles, for it was recently born in the Bluegrass region at Lexington, Ky. Incidentally, it is one of the most powerful cars in the tour—45.

Smallest Four-Cylinder Hails from Detroit—The Hupmobile is one of the little fellows which will probably receive more glory from a consistent performance than from score. It is expected that the smaller cars may find the schedule too difficult, but all are expected to finish. The Hupmobile is a Detroit product of 16-horsepower, with a four-cylinder motor—the smallest "four" in the contest.

MECHANICAL FEATURES THAT DISTINGUISH THE PARTICIPANTS IN THE SIXTH ANNUAL A. A. A. TOUR

No.	Name of Car	H.P.	No. Cylinders	Cylinder Bore	Piston Stroke	Driver	Tires	Shock Absorbers	Magneto	Carbureter	Speedometer
1	Premier	40	4	4½	5¼	Webb Jay	Diamond	None	Bosch	Schebler	Stewart & Warner
2	Premier	40	4	4½	5¼	H. Hammond	Goodrich	None	Bosch	Schebler	Stewart & Warner
3	Chalmers-Detroit	40	4	5	4¾	William Bolger	Diamond	Foster	Bosch	Mayer	Warner
4	Marmon	32	4	4½	4½	F. E. Wing	Diamond	Hartford	Bosch	Schebler	Warner
5	Marmon	32	4	4½	4½	H. C. Marmon	Diamond	Hartford	Bosch	Schebler	Warner
6	Maxwell	30	4	4¼	4¼	E. G. Gager	Ajax	None	Splitdorf	Maxwell	Jones
7	Jewel	40	4	4¾	5	O. P. Bernhart	Diamond	None	Bosch	Schebler	Stewart
8	Pierce-Arrow	48	6	4½	4¾	F. S. Dey	Goodrich	Hartford	Bosch	Pierce	Warner
9	Pierce-Arrow	48	6	4½	4¾	W. F. Winchester	Goodrich	Hartford	Bosch	Pierce	Warner
10	Glide	45	4	4¾	5	A. Y. Bartholemew	Goodyear	None	Eisemann	Schebler	Stewart
11	Thomas	70	6	5½	5½	G. G. Buse, Jr.	Diamond	Hartford	Bosch	Mayer	Warner
12	Midland	35	4	4½	5¼	E. O. Hayes	Diamond	None	Remy	Kingston	Jones
14	White	40	..	...	...	H. N. Searles	Diamond	None		Kerosene	Jones
100	Moline	25–30	4	4½	5	C. H. Van Der Voort	Goodrich	Hartford	Bosch	Schebler	Warner
101	Moline	25–30	4	4½	5	J. A. Wicke	Goodrich	Hartford	Bosch	Schebler	Warner
102	Moline	25–30	4	4½	5	W. S. Gregory	Goodrich	Hartford	Bosch	Schebler	Warner
103	Brush	7	1	4	4½	P. A. Trinkle	Ajax	None	None	Buffalo	Warner
104	Brush	7	1	4	4½	D. B. Huss	Ajax	None	None	Buffalo	Warner
105	Chalmers-Detroit	40	4	5	4¾	John Machasky	Goodrich	Hartford	Bosch	Mayer	Warner
106	Hupmobile	16.9	4	3⅛	3⅝	Frank Steinman	G & J	None	Bosch	Breeze	Stewart
107	Maxwell	30	4	4¼	4¼	Chas. Goldthwaite	Ajax	None	Splitdorf	Maxwell	Jones
108	Pierce-Arrow	36	6	4	4¾	J. S. Williams	Goodrich	Hartford	Bosch	Pierce	Warner
109	Pierce-Arrow	36	6	4	4¾	C. Schofield	Goodrich	Hartford	Bosch	Pierce	Warner
110	McIntyre	16	2	4¾	4¾	Frank Goodwin	Diamond Solid	None	Remy	Breeze	Stewart
111	Jewel	40	4	4¾	5	John Shimp	Goodrich	Hartford	Bosch	Stromberg	Warner
112	Mason	20	2	5	5	Snyder	Diamond	None	Splitdorf	Schebler	Stewart
114	Lexington	45	4	4¾	5	John C. Moore	Goodrich	Hartford	Bosch	Schebler	Warner
51	American Simplex	50	4	5	5	W. A. Woods	Goodrich	Hartford	Bosch	Am. Simplex	Warner
52	Chalmers-Detroit	40	4	5	4¾	Jean Bemb	Diamond	Hartford	Bosch	Mayer	Jones
53	Premier	40	4	4½	5¼	Cliff Waltman	Diamond	None	Bosch	Schebler	Stewart & Warner
75	Rapid	..	..	...	...	T. P. Meyers	Solid				
76	Thomas	..	4	5¾	5¾	George Schuster	Diamond	Hartford	Bosch	Mayer	Warner
79	Studebaker	40	4	4¾	5⅛	G. W. Smithson	M. & W	Hartford	Bosch	Garford	Warner
80	Studebaker	40	4	4¾	5⅛	Harry McIntosh	M. & W	Hartford	Bosch	Garford	Warner
81	Studebaker	40	4	4¾	5⅛	Donald McIntosh	Goodrich	Hartford	Bosch	Garford	Warner
82	Maxwell	30	4	4¼	4¼	Jesse Illingsworth	Ajax	None	Splitdorf	Maxwell	Stewart
83	Chalmers-Detroit	40	4	5	4¾	Harry Bill	Goodrich	None	Bosch	Mayer	Warner
96	Acme	..	6	4¼	5	E. L. Ferguson	Goodrich	Hartford	Eisemann	Acme	None
97	E-M-F	30	4	4	4½	R. J. May	M. & W	None	Splitdorf	E-M-F	Warner
98	E-M-F	30	4	4	4½	Geo. Meinzinger	M. & W	None	Splitdorf	E-M-F	Warner
99	Premier	60	6	4½	5¼	Ray MacNamara	Goodrich	None	Bosch	Schebler	Stewart & Warner

Technical Committee That Kept the Boat Waiting



Pilot Dal Lewis, Mort Reeves, and Tour Secretary Ferguson

HOW DETROIT ENTERTAINED AND DINED GLIDDENITES

DETROIT, July 12—The last man to climb into the last car that got away in the Glidden Tour heaved a sigh of relief as the city hall faded from view and the machine bowled out Michigan avenue with Kansas City as its ultimate destination. The sigh was not occasioned by joy at leaving the hub of the automobile industry; but, like scores of others who preceded him in the line, there was a feeling of relief on the part of the tired mortal in question over the fact that "Glidden Tour Days" did not extend over a longer period. If they had some of the participants, even accustomed as they are to strenuous doings, must have landed in a sanitarium.

At the outset the Detroit Auto Dealers' Association committee having the entertainment of Gliddenites and other visitors in charge announced that there would not be a dull hour from the moment the first contingent reached the city until the last tourist had departed. There wasn't a dull minute, much less an hour.

What with a banquet Friday evening that lasted well along into the night; a tour of inspection of local automobile concerns Saturday morning; a parade Saturday afternoon in which 1,030 machines participated, and which marked an epoch in such events; in the evening a dinner to A. A. A. directors at the Automobile Club of Detroit and a frog-leg feast at Lighthouse inn for visiting newspaper men, with E. Leroy Pelletier as host; a boat ride across Lake St. Clair to the St. Clair Flats, the "Venice of America," on the palatial steamer *City of Cleveland* Sunday afternoon, and numerous little dinners, committee meetings, and the festivities attendant upon getting away Monday morning, the motorist who managed to snatch even a few minutes of the simple life didn't venture inside the danger zone that extended for a mile or more in every direction from the Hotel Pontchartrain, headquarters of the A. A. A. touring committee, and from which the Glidden tour started.

The real event of the preliminaries, and the only one which came anywhere near furnishing a sensation, was the dinner tendered officials of the A. A. A. at the Pontchartrain Friday evening, at which covers were laid for one hundred and ten.

Tents Were Used by Many of the Gathering Tourists in the Campus Martius Preliminary to the Start of the Tour

Chairman F. B. Hower, of the contest board, the principal speaker of the evening, did more than spat some of his hearers on the wrist. He rapped them across the knuckles in a way that left the only sting in the entire program. Chairman Hower was disappointed at what he chose to construe as apathy on the part of many manufacturers, and he did not mince his words in giving expression to his displeasure.

"If anyone had asked me at the outset how many cars we would have in the tour this year," said Mr. Hower, "I should have guessed 125. We all guessed that. Then came the revelation. I began to receive letters from manufacturers all over the country who found that they could not enter the tour. The reason? They were enjoying too much prosperity. They couldn't see where they were going to gain anything by entering the tour when they were unable to fill the orders they had. So we have fewer cars than we expected.

"I tell you, gentlemen, that this auto business may be to the manufacturer an industry. To us who own and drive cars it is a sport. We are interested in these contests for the sport they offer. I do not say those manufacturers who made excuses were afraid of the sporting chance. That would be unfair to them. But they did not enter; and I tell you that we must keep up the sporting end of the industry if we wish to maintain the industry itself.

"I shall be criticised for what I am saying, but I do not care. I am not here to promote the industry, but to promote the sport through contests. I say that those manufacturers who did not enter this tour hurt themselves, not us, for the Glidden tour shows the progress of the automobile. Those who are unwilling to show what progress they have made are hurting the industry, not the sport."

A murmur of surprise followed Chairman Hower's remarks, indicating plainly that many of his hearers were not in sympathy with the pessimistic view he took of the situation, but no further reference to the incident was made.

Chairman Hower was presented by Mayor Breitmeyer with a gold key to the city. The Mayor dwelt at some length upon the industry and what it has done for Detroit, welcoming the tourists and other guests in a happy manner.

President Speare, of the A. A. A.; Charles J. Glidden, donor of the trophy which is the prime cause of the tour; George C. Diehl, of Buffalo, good roads advocate par excellence; Horatio S. Earle, former Michigan highway commissioner; Hugh Chalmers, of the Chalmers-Detroit Motor Car Company; Benjamin Briscoe, Col. Pardee and others were also on the toast list, which was an extensive and too prolonged one, and in which all the participants vied with each other in saying kind things about everybody elsse.

President George Lane, of the Detroit Auto Dealers' Association, was toastmaster, and contributed much toward making the event the enjoyable affair it proved to be. The banqueters departed with warm appreciation for the hospitality and public spirit of the Detroiters, and all joined in the wish that they might meet again in the city "where life is worth living."

Banquet Tendered A. A. A. Officials by the Detroit Auto Dealers' Association, at Hotel Pontchartrain, July 9

DETROIT ENTERTAINS A. A. A. DIRECTORS

One of the most successful social functions preceding the start of the tour was the dinner given by the Automobile Club of Detroit to the directors of the A. A. A., the affair taking place Friday evening at the picturesquely situated country clubhouse at Pine Lake. President C. H. Hecker made a versatile toastmaster, and under his skillful suggesting the orators kept themselves in condensed form. President L. R. Speare and Chairman F. B. Hower spouted some about the A. A. A., but more about the hospitality of Detroit, to which S. A. Miles, Alfred Reeves, Col. F. M. Joyce, Thomas Henderson and A. G. Batchelder added other hunks of appreciation. Ex-President Edwin S. George said the club was glad to have such thankful guests.

Intermingled with the occasion was the formation of the Aero Club of Michigan, of which W. E. Metzger was elected president and compelled to supply a verbal acceptance. Since Charles J. Glidden is becoming a well-known aerial traveler his presence naturally brought about some words of aeronautical complexion. It was midnight before the 26-mile return to the city via autos had landed the banqueted ones at the Hotel Ponchartrain.

ODDS AND ENDS ABOUT TOUR AND TOURIST

A Terrible Drought Averted—Had it not been for rare presence of mind on the part of Mayor Philip Breitmeyer at a critical moment some of the most promising aspirants for Glidden Tour honors might have suffered untold hardships. As it was, the city's chief executive received the plaudits of all who witnessed his act, as well as the thanks of others who benefited by the heroic measures to which he resorted.

A few minutes before the steamer *City of Cleveland* was due to leave the dock Sunday noon, giving the Gliddenites and others a lake ride, several barrels bearing a striking resemblance to those sometimes used to store "hops" in were rolled aboard. Just as the lines were about to be cast off a trusted lieutenant, anguish written all over his features, rushed up to his chief and in agitated tones imparted the astounding information that there was no such a thing as a pump aboard, beer being too plebeian for regular patrons of the craft. Now, for the benefit of the uninitiated, it might be explained that barreled beer minus a pump with which to extract it is not much as a quencher of thirst. Mayor Breitmeyer grasped the situation in an instant. Hurrying off the boat, he entered an automobile, cast speed regulations to the wind, and almost before his absence was noted dashed back bearing in his hand the necessary pump, thereby saving the day.

How the pump worked overtime as long as the supply of "hops" lasted is another story.

His Distinguished Substitute—There is one Postal Telegraph operator now en route with the Glidden tourists who is wondering whether the laugh is on himself or someone else. Friday night a heavy-set man with a stubby black mustache strolled into press headquarters at the Hotel Pontchartrain, and after watching Operator Pearl Williams for a moment let drop the remark that he once handled a key himself.

"Just the man I'm looking for," exclaimed Williams. "Here's Minneapolis on the line now."

The one-time operator dropped into the chair vacated, gave his wrist a couple of twists by way of a preliminary loosening up, grasped the key and began sending the message placed before him. He wasn't familiar with the present-day code, but he was long on energy, and the receiver at the Minneapolis end of the line went into high speed. The Minneapolis correspondent who was pounding out his story a few feet distant, took one look at the new operator and then went to work as though determined to annihilate the typewriter. The man at the key worked away steadily until the last word of the message had been sent, then got up and strolled away as though nothing had happened.

"Who was that?" inquired an interested bystander of the correspondent.

"That?" repeated the correspondent. "Why, that's Charles J. Glidden, the man that made the Glidden Tour possible."

Other Events Are Talked About—For a number of those who gathered around the Gliddenites there were other contests in mind. From several quarters representatives of coming events came to arouse interest in them and to explain the rules and routes. Road races, hill climbs, and endurance contests were about equally divided. The Indianapolis Speedway was well represented by a number of newspaper men from that city, and, of course, by the automobile manufacturers. The Atlanta speedway also had a prominent inning and circulars giving the details of its construction were placed in proper hands. The races of the Quaker City Motor Club in October and that of the Lowell Club on Labor Day were spoken of frequently, and from present indications will be well supported. A number of the Munsey staff men, Newmeyer of New York, Wade of Boston, and Ward of Washington, were on hand with entry blanks and full particulars of the Munsey endurance contest from Washington to Boston and return, under Glidden Tour rules.

Pelletier Host of Newspaper Scribes—When the newspaper men, who had with one mind attended the baseball game on Saturday, returned to the Pontchartrain they were rounded up by LeRoy Pelletier, the recently appointed assistant general manager of the Studebaker Company, and in a number of Studebaker cars were taken to a famous shore resort, the Lighthouse Inn, for a frog-legs and fried chicken dinner. About thirty-four sat in the grill room and toasted the successful automobilist and publicist. Mr. Pelletier expressed his welcome in a particularly apt form, in that he thanked the guests for having enabled him to be promoted to his new position. It was the support given him by "the boys" to which he ascribed his recent successes. There were some knocks and some boosts during the course of the remarks, for it was understood that no speeches were in order.

Good Work at Detroit—Too much praise cannot be given the committee from the Detroit Auto Dealers' Association having the entertainment of the auto men in charge. While the entire association performed valuable service, the committee members, ably seconded by Secretary John Gillespie, worked unceasingly to make the visitors feel at home. They succeeded, too, the universal expression of sentiment being that at no previous A. A. A. tour had there been such elaborate preparations or such a harmonious working out of the entire programme as in Detroit. Charles Grant was chairman of the committee, and had as his efficient lieutenants Wm. E. Metzger, Frank Briscoe, Wm. R. Orr, R. K. Davis, Wm. F. V. Neumann and George E. Lane.

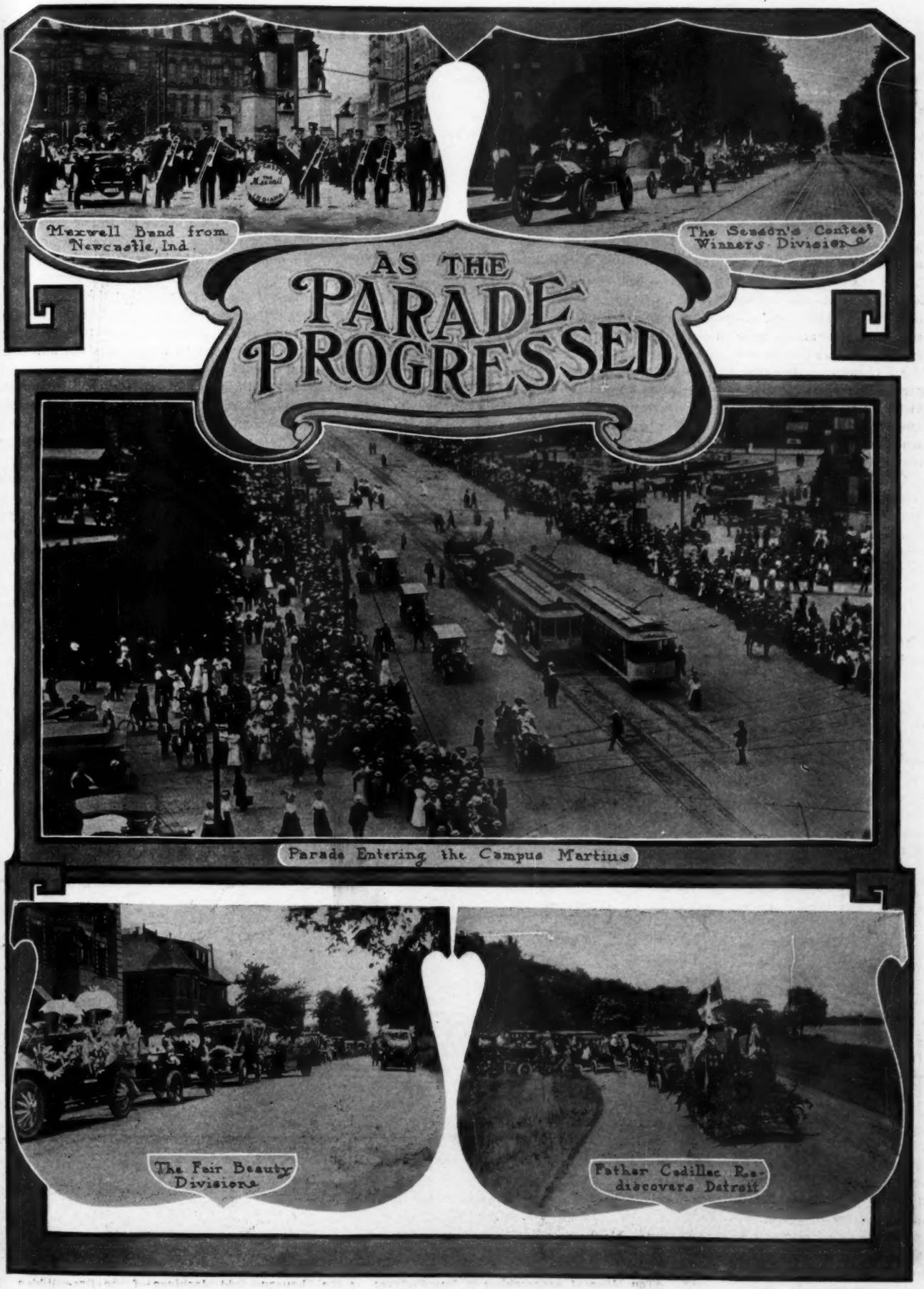
Glidden a Wedding Tour for Hower—Henry H. Hower, with his bride, spent Glidden Tour Days in Detroit. "Ain't they just the cutest little couple that ever came over the pike?" was heard on all sides. Young Mr. Hower, diminutive though he may be, is just as tall as Czar Hower, his uncle, and likes to show it. Chairman Hower is very fond of his nephew, who is now advertising manager of the Frank B. Stearns Co., of Cleveland, having relinquished his position on the *Plain Dealer* of Cleveland, as automobile editor, to take the position. Mr. Hower was married June 9, and his Detroit trip was in reality his wedding journey. Mrs. Hower became immediately popular.

Freedom of the City a Reality—A little gold key to the city of Detroit presented to Chairman Hower as the representative of the tourists really did open the doors of the city, for the appearance of a tour badge was sufficient to earn attention anywhere. The one hundred and fifty men of the touring party were met everywhere with open arms and were really sorry when the final night came. The other two hundred and fifty who didn't come along will read of Detroit's doings, then the doings at other points, and perhaps regret that they did not "take a chance anyway."

City of the Straits Makes a Big Hit—Looking backwards, Detroit is seen so far ahead of all other cities that have been honored as the starting point of the big tour that comparisons are odious, especially to the residents of these cities. The home of twenty-one manufacturers of automobiles stopped business for the time to entertain the visitors.

New Yorker Wished for Some Western Enthusiasm—New Yorkers watched the great parade, with 1,132 cars in line and several score expensively decorated cars, and then went down the St. Clair River on the *City of Cleveland* with six hundred enthusiasts. They could not help but think what might be done in New York with like enthusiasm to that shown in Detroit.

Did Big Business in Khaki Uniforms—Khaki uniforms were purchased by nine-tenths of the tourists and khaki will be the universal costume of the tour. One dealer in Detroit sold nearly one hundred and twenty-five suits at $3.50 per suit of pants, coat and shirt.


Maxwell Band from Newcastle, Ind.
The Season's Contest Winners Division
AS THE PARADE PROGRESSED
Parade Entering the Campus Martius
The Fair Beauty Division
Father Cadillac Rediscovers Detroit

A PARADE OF AUTOS THAT TOLD ITS IMPRESSIVE STORY

DETROIT, July 12—One thousand and thirty automobiles to-day took part in the greatest automobile pageant ever held—a part of the Glidden tour preliminaries—and the line extended over a course ten miles in length. Combined with this almost phenomenal turn-out were the hundreds and hundreds of touring cars and roadsters parked along the route. The owners and manufacturers of the city had promised to give a spectacle that had never been equaled, and they succeeded.

But not alone in numbers did this event surpass previous affairs of its kind, but also in the matter of decorations. The opinion was unanimous that never before has there been such a motor-driven galaxy of the wonderful and beautiful. Electrically, gasoline, and steam-driven cars participated; and cut flowers, artificial ones, ribbons, satins, birds, and all imaginable forms of decorations were in evidence. Indeed, so much painstaking labor had been put upon those who were competing for the handsome prizes that the judges, persons well able to discern harmony of coloring, were at great loss. In some cases the victor in the divisions was cause for deep pondering. Sufficient handsome rewards had been offered to make competition well worth while, and consequently the prize list was long and contenders most plenteous.

Cadillac was the fortunate one in the class for the most artistic float or decorated car in the parade, and its representative was from the factory. This was a float built to depict the landing of Cadillac. The car had been fashioned into a large boat, in the bow of which stood Cadillac, a large banner in his hand. Back in his craft sat a number of Indians in their full tribal regalia, and so deftly had the construction been planned that the driver of the car was invisible from the exterior, just this little touch giving the whole float a gliding effect. In the same general class was a "Lady's special," and, with a diamond and ruby ring to be presented, this will be awarded later.

The parade was started at about 1 o'clock, ran through the center of the city, and out to Belle Isle Park, where the actual judging took place. When the entire number of cars had assembled on the green, a view was presented which has had no equal. Impressive as was the length of the event, in passing a given point downtown, it was even more so when the machines were banked and massed, scores of rows deep. Electrics took the lead in the contesting division, although the police squad elicited no little comment. Four little Maxwell Junior runabouts, each carrying one officer in addition to the driver, cleared the streets instead of the more conventional platoon of horsemen.

The Anderson Carriage Company seemed to have turned loose a month's output, perhaps, for it was stated that the value of the half-hundred Detroit electrics was close to $125,000. The Columbus electrics were also well represented, as were other standard makes. The count of the various makes was not authenticated, but it was stated around headquarters in the evening that Cadillac and Brush led with about 80 cars each. Chalmers-Detroit, Packard, Regal, Maxwell, E-M-F, Hudson and Rapid were not far behind, however, and all had more than a dozen apiece. So many of the 400 decorated cars were so well disguised that it was almost impossible to tell at a glance just what make they were. The features of the cars are too numerous to mention, and a few must suffice.

One that attracted considerable attention was a float entitled "The Spirit of '76," and was a representation of the famous painting. Dr. E. B. Smith furnished the outfit, importing a veteran trio which could fill the parts. The local fire department was on hand with its "flying squadron," holding second place in line. The Morgan & Wright Company had a particularly comprehensive display, using four large trucks to show the details of making a rubber tire. First was a scene snatched from the tropics, with a number of boys of color gathering the

Ten Miles of Automobiles in One Picture; as the Thousand Odd Machines of the Pre-Glidden Tour P... Detroit ...

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sap from trees. Then on the following platforms were stages in the processes of curing, and through various steps to the shipping of the completed product. Specimens of rubber in many forms were hung on the sides of the machines.

The *News-Tribune* has been conducting a "prettiest little girl" contest, and about 200 of the gaily-dressed little maidens who have been scoring highest were carried in six big trucks of the Rapid species. A really beautiful creation was seen in a car decorated by B. Schroeter, a local florist, who trimmed his machine with elaborate taste, using real flowers and silk ribbons. In front rode a great swan with spreading wings. Sunflowers formed the feature on a Columbia electric owned and driven by Gabriel and Mrs. Chiera. The number of beautiful electrics driven by the equally beautiful women of the City of the Straits was legion, and it is likely that the women along the route feasted their eyes upon fascinating gowns as well as machines.

For electric cars there were two prizes, the first a chest of silver, won by the makers of the Detroit cars, who had one decorated with pink and white roses, a solid mass. The second award, of a ladies' traveling case, went to Mrs. Eva Beecher, whose car was trimmed profusely with white roses and doves.

For gasoline and steam cars there were also two prizes, but the first one is in doubt until the car which was adjudged best is located. This is really a peculiar situation, when there is a handsome chest of silver awaiting some fortunate Detroit autoist, who is unaware of the fact. Second prize was presented to the Maxwell car, trimmed with a bank of white roses, and filled with children, and bearing the Maxwell motto above: "Perfectly Simple, Simply Perfect." The letters were in purple. Three motorcyclists were given prizes, awarded, of course, because of decorations, but the two-wheeler which elicited the most applause was one on which a real live dog sat on the rear fender; and the animal seemed to enjoy the doings as much as the rider.

Famous cars of several makes joined the procession, prominent among them being the Indian, a trophy winner, the Chalmers-Detroit *Bluebird,* driven by Mattson. Another was the Regal which is en route from the Atlantic to the Pacific; and others were the Flag-to-Flag Chalmers-Detroit pathfinder, which has recently returned from Mexico City; and the little Brush which crossed the Continent, and incidentally climbed Pike's Peak.

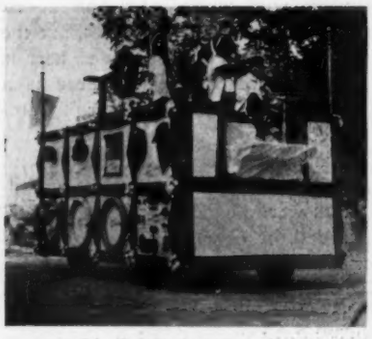
GOSSIP GATHERED AROUND THE STARTING POINT

No Foster Music This Year—There was dismay when Manager Foster, of the Gabriel Horn Manufacturing Company, appeared in Detroit with his new bugle horn and made the statement that he would not take part in the tour. Mr. Foster was one of the features of the journey last year, but for some reason Chairman Hower did not arrange for the appearance of the Gabriel Horn car again this year. It had been the intention of Mr. Foster to put his newest creation, the thirty-seven tube horn heard at the shows last winter, on a car for this tour, but Anna Held, at the Madison Square Roof Garden, is utilizing the horn in a theatrical specialty.

Chalmers Team Gets a Glad Hand—Frequent applause for the Chalmers team—Lorimer, winner of fifteen events in the East; Matson, winner of the Indiana Trophy race, and Billy Knipper, in the Flag to Flag car, with Mexican dirt all over it and all of the signs and paraphernalia still displayed—was heard throughout the line of parade. Manager Harry Bill, of the Contest Department of the Chalmers Company, led the procession of several score cars in the Glidden Tour press car, No. 83.

Everybody Wanted His Picture Taken—Photographers found their opportunity Sunday to catch committees together, for the boat was ready to sail when it was found that the Technical Committee was absent, and when the committee did arrive it was promptly held up for a photograph. While waiting for

Detroit Appeared When Grouped on the Lower End of Belle Isle, with the Casino in the Background



A Morgan & Wright Tire Float

"Pike's Peak or Bust" via the Rapid Truck

Goodyear Co.'s Prominent Display

Three Characteristic Floats that Participated in the Industrial Division of the Great Parade

this committee, Detroit's popular Mayor and the Glidden Tour Committee posed for a photograph, and then the committee of the D.A.D.A., Messrs. Gillespie, Lane, Davis and others, were photographed.

Too Much Alphabet for One Man—Manager Alfred Reeves, A.M.C.M.A., and Manager Sam Miles, N.A.A.M., with President Smith, A.M.C.M.A., and E. P Chalfont, former manager of the A.L.A.M., and Secretary Elliott, A.A.A., formed a notable group in a Packard car one day, and a man who tried to tell who were in the party, using initials to designate the organizations, gave it up in disgust and went and took another drink, just to straighten out his tongue. He had had several before.

Pelletier On the Job, Too—E. Leroy Pelletier, advertising manager of the Studebaker businesses, carriage and automobile, and about to remove to South Bend to take up the arduous duties cut out for him, found time to spend with the visitors. Mr. Pelletier withdrew the E. M. F. entries in the tour and entered three Studebaker cars especially for the press men, whose thanks he received with a smile. Three jolly crews went out in the Studebaker cars.

Many Interested in the Bull Fights—There is much talk among the tourists about the Flag to Flag contest in October for the Wahlgreen trophy, and there is every indication that the route laid out by the Chalmers-Detroit will be followed by a great cavalcade in October. The album of views taken along the late pathfinding trip, displayed by Spooner and Wells, of New York, was constantly surrounded by an interested crowd, and among the number many makers.

"Awaiting the Starter's Gun"

From the Detroit Free Press.

What Smith Said About the Tour—"The tour is a serious proposition," said H. O. Smith, of the Premier Company, "and I do hope that when the special train is reached the tourists will respect the wishes of those who want to sleep and do no rough work in the way of horse play. They will be too tired, I think, to devote much time to cutting up. The work laid out for all of us is arduous in the extreme, and every man will need his wits to get through."

Talk Of a Ladies' Glidden Tour—"What will become of the ladies?" said one man who missed the presence of the women from the 1909 tour. The question is easily answered. Give the ladies a national tour for women drivers only. The number of fair women who drive motor cars is now large enough, thanks to the pioneer work of Mrs. Cuneo, to bring about a tour with, perhaps, more entries than the present tour, and more interesting withal.

Maxwell-Briscoe Forces Had Lots of Fun—Messrs. Maxwell and Briscoe, with their great team of branch and division managers, made the Glidden Tour Days in Detroit a vacation. Fun, and not business, was in the air, and the aggregation left Detroit for New Castle well satisfied to take up more serious business. The Maxwell-Briscoe forces are a fine looking body of men and, when resting from business cares, a jolly lot, too.

Press and Free Lance Cars Attract Much Attention—The three Studebaker press cars, one Maxwell-Briscoe and one Chalmers-Detroit formed quite a brigade. Starter Ferguson with his Acme, Chairman Hower with his Premier and two E. M. F. confetti cars formed a representative group of free lance cars. The press cars, with special liberties to run freely at all times, proved attractive, and seats were scarce in them.

Hot Pace Set for Other Cities to Follow—Minneapolis, Denver and Kansas City have the pace that kills already set for them. Should all three live up to their promises, the A. A. A. tour of 1909 will live long in memory as one of the most enjoyable ever participated in from the social point of view. Bad roads won't detract one iota from the enjoyment, either.

Artie Kumpf Missing from Pierce Team—Last year Teddy Dey led the Piercites as captain, but for the tour this year each driver works independently. One of the greatest of the Great Arrow team, Arthur Kumpf, was missing in the lineup. Kumpf is but a boy, and in past tours has drawn much favorable attention. He is now at Bretton Woods with Col. Chas. Clifton.

Numerous Ubiquitous Agents on Hand—Agents for twenty-one makes of automobiles found it very convenient to visit Detroit during Glidden Tour Days to transact business, and found it also convenient to withhold the transaction of that business until the close of the three days of fun. The city hotels were full of visitors attracted to the city for the meet.

New Method of Disposing of Baggage This Year—There was a noticeable lack of extra baggage on the cars when they started Monday morning. Wise men do not carry baggage to litter up the tonneau and make things disagreeable. Much of the comfort of those who had to ride in the tonneau was due to the shipment of the bags and trunks by express. This shows that the old motto, "Live and Learn," still holds good.

A Regular Shower of Gifts—No one looked the proverbial gift horse in the teeth when the Brush runabout makers handed out brushes and looking glasses at the start, nor when thermos bottles filled with wine were handed out, nor when matches that don't go out in the wind were given away. Presents came regular and were received gladly.

Sweet Music by the Maxwell Band—"Oh listen to the band," said someone when the Maxwell Band first appeared in natty uniforms, and everyone did listen, morning, noon and night, to good music throughout the three days of the meet and at the start of the tour, also. The band added much to the enjoyment of the occasion.

Couldn't Round up the Mud Larks—R. H. Johnston, the White advertising manager, tried his best to round up the Mud Larks, of whom fifteen at least were present, but failed. The New York show will see an association of the Mud Larks formed with officers and a correct list to date of all living members of the terrible tour of 1903.

Plenty of Old-Time Cyclists on Hand—Old-time cyclists, and somehow there are a lot of them in motoring circles, were reminded of the old-time days of the League of American Wheelmen and the national meets of that body. The fun was fast and furious, and much of the old-time horseplay of bicycle days was revived.

Soon Own the Whole Town at This Rate—Ben Briscoe facetiously warned the Detroit people that danger existed providing Hugh Chalmers continued to grow in enthusiasm. Mr. Briscoe predicted that the hyphenated name might be dropped and that Detroit might be made famous under the name of Chalmers only.

Benefits Accruing From the Tour—H. O. Smith, of the Premier Motor Company, of Indianapolis, one of the staunchest supporters of the annual tour, was one of the jolliest members of the party, and said: "I believe in the tours. I know of the good they do, and I am going to go through to the finish, I hope sincerely."

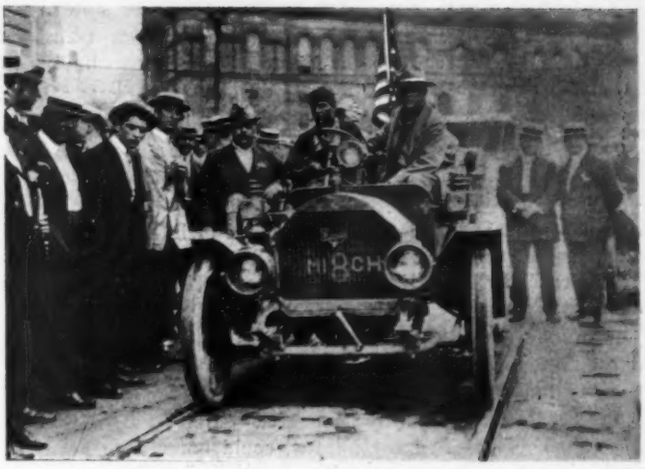
Only One Amateur Driver Started—The one amateur of the tour, Gus G. Buse, with his sons, "is again in our midst," and again has a six-cylinder Thomas. Mr. Buse has the courage of his convictions, and he does not feel that the tour is so strictly a trade tour as to be uninteresting for the private owner of a machine.

I Love My Tour, But Oh, You Bed—Chairman Hower added to his popularity when he set 10 o'clock as the starting time for the tour, for had the hour been as early as is usual many might have been found asleep during that first day's run. The Glidden Tour days in Detroit gave little chance for rest.

Missed the Old Faces—Many familiar faces were missed from the tour, among others Frank Nutt, of the Haynes forces; Bob Burman, of the Peerless; Charlie Carris and Bates, of the Franklin team, and Mr. Tuttle, of the Stoddard-Dayton. The latter company found it impossible to get its cars ready.

Where Is Life Worth Living?—It took two days, but Detroit won out, and the Glidden meet badges, showing an automobile on one side, were reversed universally to show prominently on the other "In Detroit Life is Worth Living." Some wore two badges to prove the truth of the assertion.

Such a Sendoff—Detroit's way of doing things left not one item to criticise. Certainly no Glidden tour ever received such a sendoff and those who failed to visit the City of the Straits for the Glidden Tour days lost an event that was enjoyable for every moment of the time.



Mr. Glidden Restarts the Transcontinental Regal Car

Overman and Abbott Lost Out on Their Trip—Charles R. Overman, who sells carbureters, and Bob Abbott, of the Imperial Wheel Company, found Detroit attractive with so many makers on hand, so postponed proposed trips to other points until after the start of the tour.

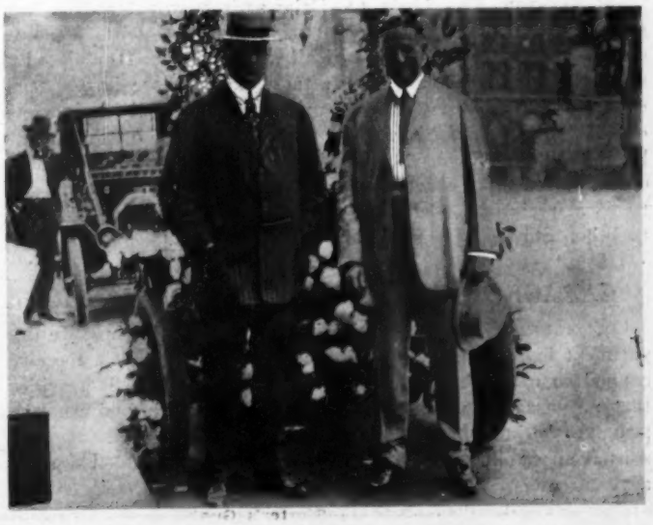
The Large, Handsome Man with the Mustache—There was Pat Hussey, the "large, handsome man with the flowing mustache," whose time, although valuable, was freely given away without cost in order that a few days might be spent in enjoyment among 400 friends.

Western Bad Roads News Disquieting—Reports by Billy Knipper and Joe Matson, of the Chalmers team, on their return from the Denver road race, were disquieting, for both reported the roads in Kansas and Iowa a sea of mud and the rivers over their banks.

Lamp Rivals Just Like Twins—Charlie Hall and ex-Gov. Castle, rival lamp men, but Damon and Pythias personified when away from business, drew much attention at the Pontchartrain owing to their size, grace and general good looks.

Small Number of Entries Due to Lack of Foresight—It is really surprising that more makers did not enter the tour in view of the fact that the very territory passed through is the best, from the standpoint of business, in the land.

Gilson, Mitchell Man, Popular—One of the jolliest and most popular of the visiting tradesmen was Jimmy Gilson, of the Mitchell, whose side wheel was almost invariably Davie Post, of the Veeder Manufacturing Company.



Rival Lamp Makers—Charles M. Hall and Governor Castle

Little Parade All of Their Own—The 625 men of the jolly party that went down on the *Cleveland* Sunday formed lines on the return and marched to the Pontchartrain in two lines with a number of autos in the center.

Pilots and More Pilots, But No Sky Pilots—The confetti car, for the first time, was backed up by a second car for the 1909 tour. Dai Lewis, chief pilot, and Marc Reeves, second to Lewis, captained the two cars.

New Model Haynes Cynosure of All Eyes—Elwood Haynes, the pioneer of motordom as a business in the United States, ran over from Kokomo in the 1910 Haynes, which drew immediate attention.

Many Scribes on Hand—The press of the country took interest in the tour, for over sixty press men appeared in Detroit for the tour, an average of 1½ for every car in the run.

Pierce Patten Promptly Appeared—"Bob" Patten, of the sales force of the Pierce Company, could not remain away, so made the run over to see the Pierce cars well under way.

Lots of New Models Shown—Quite a number of 1910 cars, including two Packards, were seen on Detroit's streets. The Chalmers had out their models also.

Matson Gets a Job, Too—Joe Matson, winner of the Indiana Trophy race, went out as an observer for the Chalmers-Detroit team.

Yellow Kids Once More—Morgan & Wright's Yellow Kids were in evidence at every turn, and attracted general attention.

TIRE MANUFACTURERS WILL BOOST PRICES

Circular letters have been sent out by practically every tire manufacturer in the United States announcing an increase in prices of from 15 to 25 per cent., to take effect July 16. The circulars were received by automobile manufacturers and dealers in New York last Tuesday, and on the same day a number of tire dealers on Automobile Row posted bulletins in their windows calling attention to the change. According to the tire-makers, the raise is due principally to the increased price of crude rubber, which has nearly doubled within the last three months. The makers, it is said, have held several secret meetings at Cleveland and Okron, O., at which the leading men of the industry were present, and judging from the uniformity of their announcements, they have come to a good working agreement. As it has been obvious for some time that the makers' profits were being seriously cut into by the soaring price of rubber, their action did not come as a complete surprise, except that the raise is larger than was anticipated.

DELAWARE'S NEW LAW IS RECIPROCAL

WILMINGTON, DEL., July 12—Delaware's new automobile law going into effect, the police department of this city has been instructed to arrest the drivers of all machines found on the city streets without Delaware license tags, except those having tags of States which permit visiting machines to pass through without local licenses. This will be particularly hard on the neighboring States of Pennsylvania, Maryland and New Jersey, which do not extend this courtesy to visitors. The Delaware law contains a reciprocal clause, which extends the same courtesy to other States as those States accord visitors.

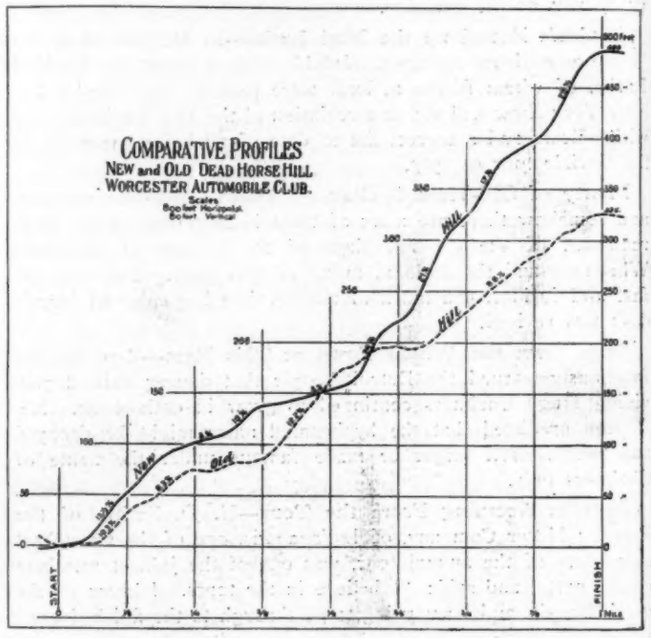
GARAGE RESTRICTION PLANNED IN OHIO

COLUMBUS, O., July 12—Chief Lauer of the Columbus fire department has prepared an ordinance to be introduced in the city council soon for the purpose of regulating garages. It provides that no garage shall be more than one story high, and that the structure be built of fire proof material. Signs prohibiting persons from smoking in the garages must be displayed. The storage and use of gasoline as well as the care of electrical wires are to be regulated. The ordinance is regarded as too stringent by garage managers.

WORCESTER WILL BUILD A REAL HILL

WORCESTER, MASS., July 12—For hill-climbing contests hereafter, the Worcester Automobile Club will have a course with nearly ideal conditions, embodying some new and popular features. Principal ones are the erection of the grand stand at right angles to the road, and over it, so that the spectators can see the cars approach, and dash right under them; and another point which no other hill in the country will have is a roadway wide enough for its entire length to have two cars climbing at the same time.

The plans for the construction of this rise have been about consummated, and of the $20,000 necessary, present subscriptions amount to $6,000, and the remainder is all in sight. The course is some distance from the old Dead Horse Hill and will have to be built from start to finish. Surveyors have completed their work of laying it out and actual construction will be commenced at once. It is expected that it will be ready for use early in



October, and the hope is to have the national event here next Spring. After the grading is completed the hill will be coated with Hassam pavement, the same as on the Long Island Motor parkway. The width will be amply sufficient for starting two cars abreast, and the people on the grand stand will be able to see them for three-quarters of the mile length. The rise will be 489 feet, with grades varying from two short dashes of three per cent each to one at the finish of 25. The average is about 15 per cent, lowered by the places where the road is not steep. The ascents of 24, 21, 17, and 25 per cent will be thorough tests for the cars. The old Dead Horse Hill rises but 325 feet in the mile.

COUNTERFEIT TAGS USED IN OHIO

COLUMBUS, O., July 12—The motorcycle brigade of the Columbus police force recently arrested one of the drivers of the Columbus Buggy Company for carrying on his machine a tag not furnished by the state automobile department. There was no charge that the motor car was not licensed, but rather the arrest was made because of the use of a fictitious tag. Some days ago the attention of an officer was called to the tags used which were made by the company, the same number as that on the state tags being used. The driver claimed that he could not use the state's tag on the automobile. A similar state of affairs exists in Dayton also and the state automobile department is determined to eradicate the evil.

Functions and Frailties of Motor Cylinders

By Thos. J. Fay

DESIGNERS take advantage of the properties called "chill," in connection with cylinder work, by the simple expedient of limiting the thickness of "finish" as shown in Fig. 15, so that the dense material, as indicated in the sectional drawing, Fig. 16, of a cylinder is not all cut away in the finishing process. The strength of a cylinder, if dense material is left on the inside, as well as the "skin," on the exterior, will be greater than when the cylinders are finished all over to a depth sufficient to uncover the gray iron section; gray iron, with a covering of white iron, which is very possible to realize, if the charge in the cupola is well regulated, and if the depth of finish is adequately limited.

Some Properties of Gray Cast Iron—Gray cast iron, in the sense that it is referred to here, is a remelt, in a cupola, of suitable grades of blast furnace pig iron. The gray variety of cast iron is that holding such an excess of graphite as to conceal the iron from view in the fracture. It is a foundry problem to arrive at the desired result by suitably mixing the material for the charge in the cupola. The components in cast iron are iron, silicon, sulphur, phosphorus, manganese, combined carbon, graphitic carbon and more or less "slag."

Unlike in steel, sulphur and phosphorus are held at a fairly high limit, although, as in steel, these elements have a weakening influence on the strength and endurance of the product.

In general, the limits to be put on the elements entering into castings for cylinder work may be set down, viz.:

Combined carbon, maximum, 0.75 per cent.
Silicon, maximum, 1.20 per cent.
Sulphur, maximum, 0.085 per cent.
Phosphorus, maximum, 0.50 per cent.
Manganese, maximum, 0.75 per cent.

Slag and oxides to be almost completely eliminated in practice.

It will be understood that, in practice, the components range at variance with these maximum values, and in fact silicon generally exceeds the limit set, notwithstanding the lowering of tensility, but it also affords fluidity, which is a much needed quality in cylinder irons, in view of the thin walls.

In fairly good castings the silicon content is likely to run about 1.60 per cent., but even this value will show a decline of the tensile strength, although good sound castings must rank first, and it is customary to assume that cylinders should have a minimum value of the tensile strength of 18,000 pounds per square inch, which value may be exceeded with silicon at 1.60 per cent.

Right here it may be well to point out that claims of even 35,000 pounds per square inch are frequently made for cylinder castings, and few will admit that the strength should be less than 26,000 pounds per square inch. At all events, it matters not what the strength may be in isolated cases, since none will guarantee every casting, and safety demands that the minimum value realized be taken as the maximum to figure on in practice.

If in gray cast iron the total carbon is upward of four per cent, it is at once plain that graphite will be present in considerable excess, because, in the nature of the product, combined carbon will be far below the point of chemical absorption of all the carbon present. The graphite present is indirectly an indication of softness in proportion as the amount shows in excess, but it is something of a fallacy to attribute this softness directly to graphite. Softness and ability are due to a small amount of cementite and relatively a large amount of ferrite rather than to a large excess of graphite. If, then, the total carbon is a constant, the soft iron will show a large excess of graphite because the total combined carbon will be low, and if this condition obtains, the ratio of ferrite to cementite will be more nearly in

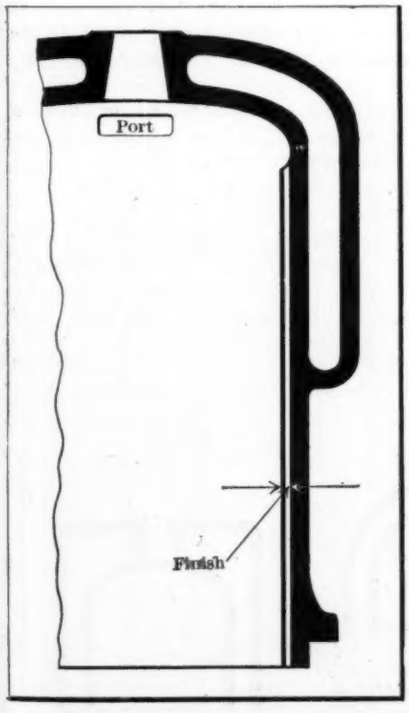


Fig. 15—Section, showing the finish allowance in the bore of cylinders stopped off at end of stroke

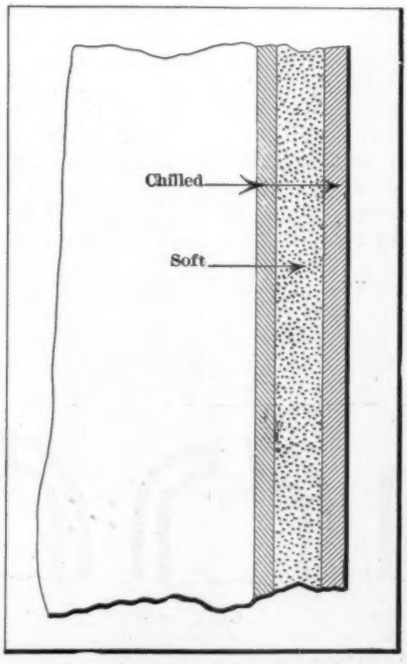


Fig. 16—Section, indicating the hardness of exterior, and soft interior of gray cast iron with slightly chill surface

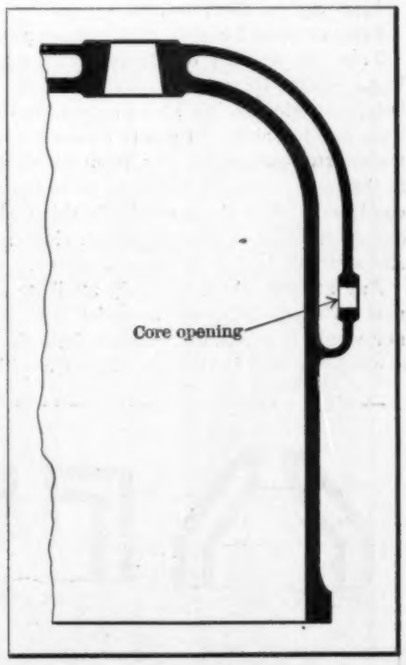


Fig. 17—Section, showing core-hole, by means of which the core is suspended in the process of casting

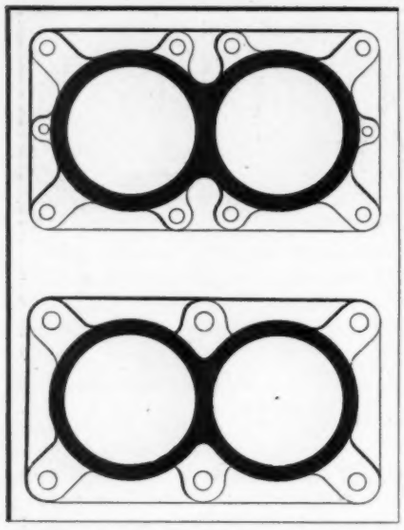


Fig. 18—Sections, showing bolting plans twin-cylinder construction

accord with the best requirement. True, graphite itself is of low strength, and an excess of graphite enmeshed in the matrix must have its weakening effect, but the difference between cast iron and steel lies in this fact.

Fixed carbon in cast iron for cylinder work should not exceed 75 points, and any increase in the fixed (combined) carbon above this point will be at the expense of excess ferrite, because this excess decreases as the total combined carbon increases, which to illustrate an example may be taken involving, say, 75 points, combined carbon.

Hence:

$.75 \times 15 = 10.25$ cementite.

And

$10.25 \times 6.4 = 65.60$ ferrite.

Therefore:

$65.60 + 10.25 = 75.85$ pearlite.

And

$100 - 75.85 = 24.15$ per cent. = excess ferrite.

At a glance it may be seen that by increasing the combined carbon to 75 points the excess ferrite fell off 24.15 per cent., whereas with the 45 points carbon the excess ferrite was 50 per cent.

The effect of graphite will best be illustrated by making a comparison, with combined carbon on a common basis, as follows:

TENSILE STRENGTH IN POUNDS PER SQUARE INCH

Fifty carbon steel, 105,000.

Fifty combined carbon cast iron, 25,000.

True, the tensility of the respective products might vary over broad ranges for various specimens and reasons, but the relation hold, nevertheless, for both products can be varied equally. Cast iron, holding about 10 points of combined carbon, would have a tensile strength of not far from 15,000 pounds per square inch, if the total carbon be the same as in the case of the 50 points of combined carbon above cited. In this an illustration of the ills of excess graphite is quite apparent, since a loss of 2-5 of the tensile strength is a good approximation.

Any attempt, then, to solely attribute good qualities and softness to excess graphite must be regarded as on slim grounds, nor would low combined carbon be a desirable condition. What seems to be best is that quantity of combined carbon holding excess ferrite about equal to pearlite, and if this contention can be substantiated, carbon (combined) should not exceed 50 points.

Phosphorus causes lack of ability to combat shock loads, which is more apparent with high combined carbon than with low, so that decreasing phosphorus should be the rule with increasing combined carbon.

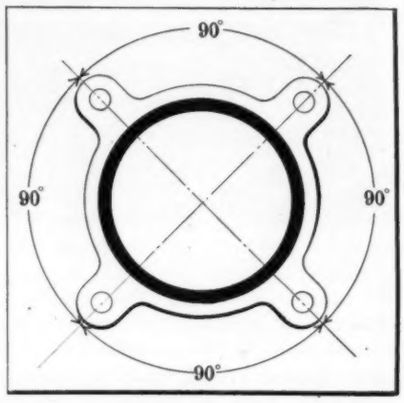


Fig. 19—Section, showing bolting plan of individual cylinder construction

Sulphur usually ranges between 0.04 and 0.16 per cent. It should not exceed 0.085 per cent. in the class of castings under discussion, and would be better at a limit of 0.06 per cent. Sulphur tends to hardness and hot shortness. Fortunately, sulphur is bound to be low with any considerable amount of combined carbon. Increasing silicon, as well as holding the combined carbon up to a fairly high value, aborts the evils of sulphur, as well as limiting the amount. If the pig and scrap and perhaps the fuel are high in sulphur, the carbon and the silicon are likely to diminish, and on this account, with high sulphur, low carbon and silicon may follow, although silicon, notwithstanding this fact, generally ranges higher than the limit put upon it from the purely strength point of view. "Chill" and a tendency to whiteness comes with high sulphur and without high silicon to match, and the castings with such characteristics are likely to be inferior.

The hardening tendencies of silicon are not rendered apparent unless it is in excess, because the softening effect of the lowering combined carbon exceeds the hardening tendency that silicon exerts. An excess of silicon favors an increase in shrinkage, since shrinkage increases with hardness.

Manganese increases the saturation limit of carbon in the molten mass, masks sulphur, and is itself a mild intensifier as compared with carbon. In automobile cylinders this element seems to be valuable above 0.75 to 0.80 per cent., while on the other hand it rarely reaches 0.80 per cent. in cylinder castings.

The saturation limit of iron for carbon may not exceed 4.5 per cent., and it is generally less. One would expect, then, a low total carbon with low manganese, and an inspection of numerous determinations bears out this fact as follows:

Total carbon, 3.00, 3.50, 4.00.

Manganese, 0.20, 0.40, 0.80.

These values are not invariable, because other conditions alter the stability of the composition, but they do illustrate the point, *i. e.*, low manganese denotes low total carbon and vice versa.

The tendency of manganese is to produce brittleness, and while chill is not due to manganese directly, it is likely to induce a condition of hardness that will result in excess chill under certain conditions; shrinkage is also increased in the presence of excess manganese.

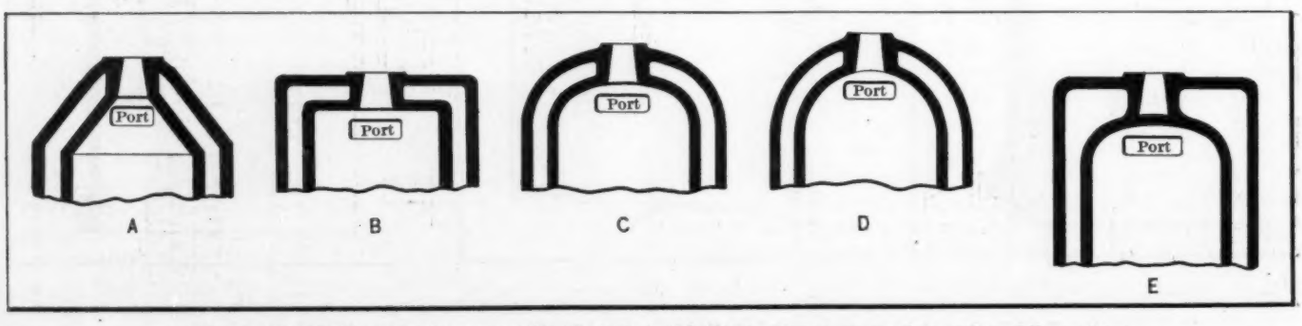


Fig. 20—Illustrating several conventional shapes of cylinder domes, as used in automobile motors

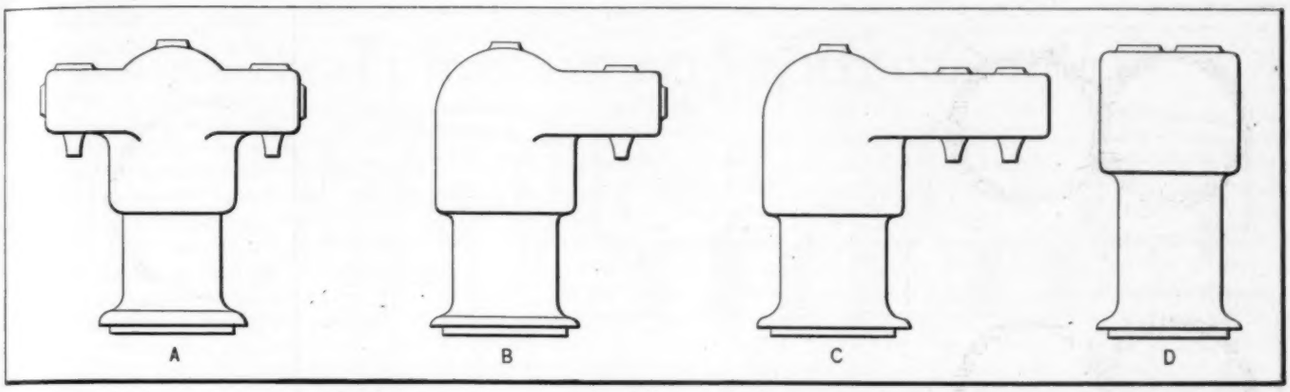


Fig. 21—Depicting the several forms of cylinders as distinguished by locations of valves

Influence of Quality of Castings on Dimensions—The precision demanded in cylinder work, and the lightness desired, tend strongly to the conclusion that no design involving a nicety of proportions will be a round success unless the quality of the material is definitely fixed upon. The discussion as here indulged in is with the idea of suggesting the formidable nature of the problem, if the designing effort is limited to dimensions and shape of parts, without considering the characteristics of the material to be used. If shrinkage is not approximately up to the figures assumed in making the patterns, the walls of the cylinders will not be of the thickness figured upon; if the metal is brittle, high compression will result in disrupted cylinders, especially if thin walls are made, on the ground that light weight is sought for.

In an attempt to realize lightness, and to avoid shrink holes and other defects, the bosses are reduced to the lowest possible mass, and the danger is in the direction of leakage, from lack of bearing of plugs, covers, etc., as illustrated in Fig. 17, of a core holes, of which there must be a certain number disposed at advantageous points around the cylinder, for the purpose of holding the cores in place.

Flanging at the Bottom Demands Secure Bolting—When cylinders are cast in pairs the flanges have to be faced off, and centering is accomplished by approximate methods by the workman, rather than by having a bottom extension fit into a recess in the crank case. The flanging is in the nature of a bottom connection between the cylinders, and unless the bolting scheme is well thought out there is danger of deformation, with possible rupture of the cylinders. Fig. 18 shows two schemes of bolting, one of which with six holding points and the other with ten holding bolts; the latter is to be preferred if the cylinders are large, and the diameter of holding bolts should be adequate for the purpose, having in mind the nature of the stresses that may be put on the section of the bolts by the mal-use of big wrenches rather than the pull due to working pressure, and the desire to abort deformation of the flange connection between cylinders. Fig. 19 illustrates flange bolting when cylinders are individual, and if the bolts are 7-16 inches in diameter the plan leaves little to be desired. On the bolts of a cylinder six inches in diameter, if the maximum pressure is 300 pounds per square inch, the total pressure will be equal to:

$$P = d^2 \times \frac{\pi}{4} \times p = 6^2 \times \frac{\pi}{4} \times 300 = 8{,}481 \text{ pounds.}$$

If four 7-16 inch bolts are used, the pressure per square inch on the section of each bolt, in tension, will be:

$$s = \frac{p}{4 \times 0.1503} = \frac{8{,}481}{4 \times 0.1503} = 13{,}940 \text{ pounds per square inch.}$$

and,

P = Pull in pounds, exerted by the cylinder, on the holding bolts.

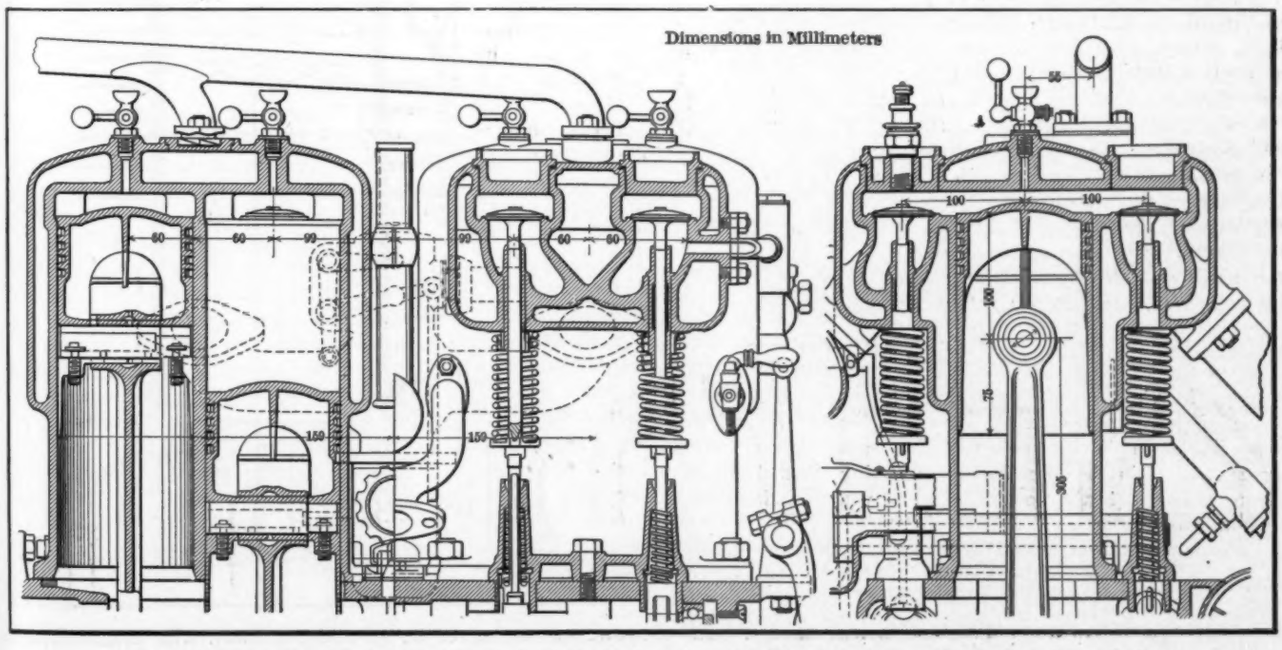


Fig. 22—Four-cylinder motor, in cross and longitudinal section, showing proportions and location of T cylinders

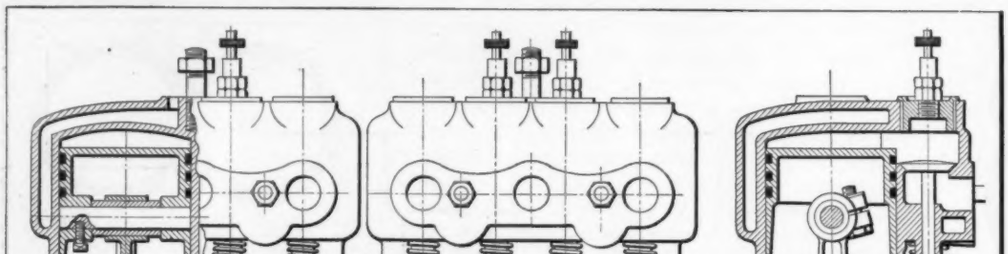


Fig. 23—4-cylinder motor, in cross and longitudinal section, showing L cylinders in place, and spacing between them

p = maximum pressure per square inch of the gas in the cylinder.

d = diameter of cylinder bore in inches.

s = strain on the section of one bolt, in pounds per square inch, in tension.

0.1503 = sectional area of one 7-16 inch bolt, counting from the depth of the thread; if the thread cuts below this diameter, the difference must be taken into account. The ability of the material of which the bolts are to be made must be considered, and if it falls below the value found for the strain, it will be necessary to add to the number of holding bolts; as a rule, materials for this work will sustain under 16,500 pounds per square inch as a low limit, which includes an adequate factor of safety, assuming the ultimate strength of the bolt stock to be 65,000 pounds per square inch.

Shapes of Domes Influence Results—It has been found, as a result of many tests, that the mean pressure in cylinders—considering a given fuel, equal methods of cooling and other conditions on a constant basis—will differ, depending upon the shape of the dome of the combustion chamber. Fig. 20 illustrates the several shapes in vogue, and referring to A it is to note a truncated cone, offering great strength, and relatively little surface between the combustion chamber and the water, or other cooling medium, on the exterior surface of the cylinder wall; B depicts a flat head, the surface of which is rather more than in that of curved shapes, and the strength of the head is the least of all; C represents an elliptic curvature, frequently adapted in high compression motors in order to restrict the volume of the combustion space; D is of a semi-sphere, offering the advantage of minimum surface to the cooling influence and strength to the greatest possible extent; E is offered for the purpose of showing that the exterior shape may be different from the interior, providing that adequate water volume is allowed for, which is one of the advantages attending this particular design.

On account of the influence of the valve ports, especially when they are located at the side, it is difficult to determine the relative surface for the several shapes without first considering the surface that follows the contour of the valve ports. As a primary consideration, it is necessary to establish the clearance volume, in view of the desired compression, and then the shape of the dome will work in, with influences for efficiency, depending upon the surface offered, remembering that decreasing surface is in the direction of increasing thermal efficiency. Mean pressure, hence power, increase with an increase in thermal efficiency also.

Considering Conventional Shapes of Cylinders—Referring to Fig. 21, A represents the T type of cylinder; B, the L type, with valves in the axle plane; C is of the L cylinder, with inlet and exhaust valves in the lateral plane, and D represents a cylinder with valves in the head, thus eliminating offsets. T cylinders are much used, and Fig. 22 shows this type in position, indicating relative proportions, as they obtain in good practice involving a four-cylinder motor. Fig. 23 depicts an L type of cylinder, showing the arrangement and relative proportions, in a four-cylinder motor, according fairly with present practice.

The T type of cylinder, having inlet and exhaust valves on opposite sides, demands the use of two camshafts, and offers the advantage of symmetry of the cylinders, with attending advantages. In the L type of cylinders but one camshaft is required, since the valves are on one side only, and lack of symmetry of the casting is one of the conditions to be tolerated. With valves in the head it is the custom to use but one camshaft, and in notable instances the camshaft was superimposed. Noiseless performance is more difficult of attainment when camshafts are so placed, due to lost motion to some extent; and to lack of muffling following the exposed position.

(*To be continued*)

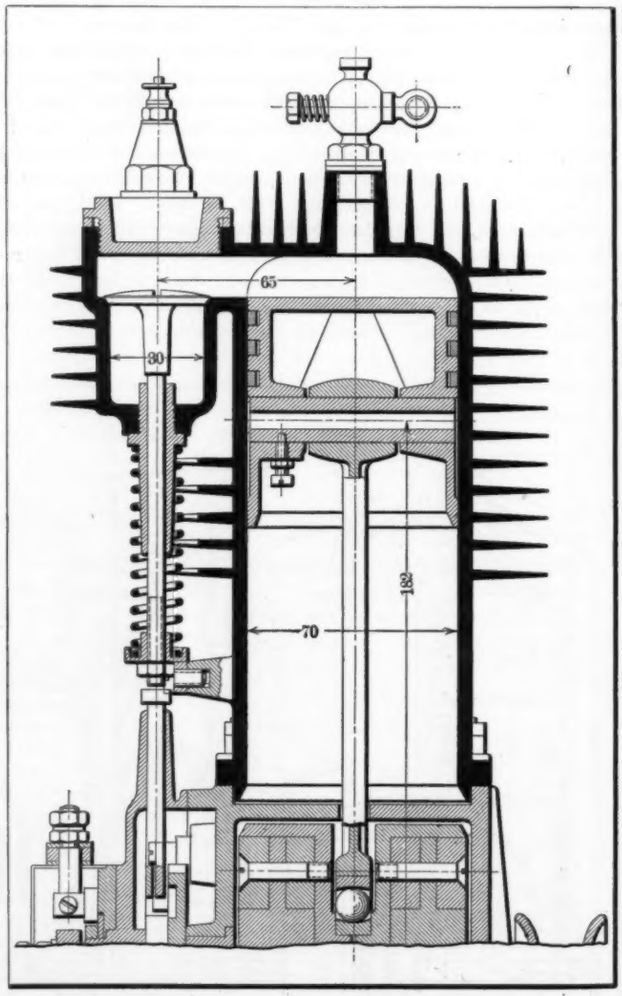


Fig. 24—Section of an air-cooled cylinder, with flanges integral, showing proportions possible with good foundry work

NEW NICKEL-IRON BATTERY WITHSTANDS TESTS

EDISON, the inventor, has promised a storage battery that would revolutionize the industry so many times, each one on trial being marked by a failure that the people have begun to be skeptical of any Edison battery. However, the new type of nickel-iron battery is out and, says *The Commercial Vehicle*, for nearly two months past the Edison battery, for which electric vehicle users have been waiting so long and impatiently, has been undergoing tests in the regular daily service of one of the leading department stores and one of the largest drygoods establishments of New York City, the two largest users of commercial vehicles in the city with the possible exception of the Adams Express Company.

R. H. Macy & Co., who own and operate thirty-one electric delivery wagons and trucks, had a Lansden wagon fitted with one of the new batteries for three weeks, since which time it has changed hands, being in the service of the pioneer dry goods house, a house that to-day maintains forty-one commercial vehicles, both gasoline and electric, but which as a matter of policy declines to allow the use of its name. By all who have had anything to do with the new battery it is spoken of in the highest terms of approval. But the best presentation of its efficiency will be made by telling exactly what has been accomplished with the battery in an ordinary electric vehicle.

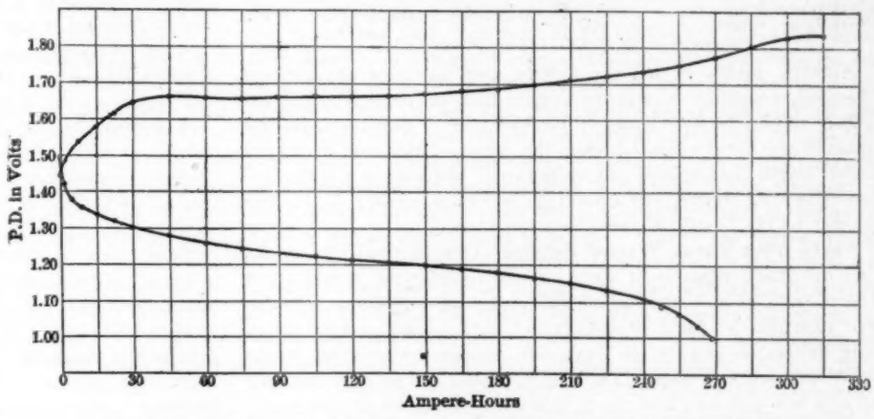
Details of the Two Sizes Made—The new battery is made in two sizes, designated A 4 and A 6. The former is of the same capacity as the earlier type E 27 Edison battery, rated at 150 ampere-hours discharge. Type A 6 has the same number and size of cells as type E 27 and is of about the same weight, but has nearly double the capacity, giving 260 ampere-hours discharge. It requires a charge of 300 ampere-hours, but the users say the loss is much more than counterbalanced by the work it does and by other points of practical excellence. The smaller size battery weighs about 700 pounds and the larger size 1,200. Size A 6 is installed in a demonstration wagon of Lansden make which has been christened the *Greyhound*, for reasons that will become obvious. At the time an investigation of the performance of this outfit was made, up to June 21, it had been running in the service of the drygoods store for nearly a month.

Upon being received it was given a special test, in which it was run three consecutive days without recharging, and made a total mileage of 93 miles. On the first day it left New York City at 8 o'clock in the morning, crossed the ferry to Jersey City and covered the Bayonne route, going all the way to Bergen Point, making approximately 100 stops for delivery of packages. It returned to the garage at 6 p. m. The same route was covered on the second day, starting at 8 a. m., making about the same number of stops, and getting back at 5 p. m. On the third day it traversed the regular Staten Island route for the store, embracing nearly all the towns on the north end of the island, which is very hilly, and making about one hundred stops. It left the store for this trip at 8.30 a. m. and got back at about 8.30 in the evening. During this entire period the battery received no "boost" and was not recharged. At the end of the test, the voltmeter reading showed 60 volts.

Unusually Severe Route Traversed—Following this initial test, the *Greyhound*, with battery A 6, was put on the Coney Island route, which is claimed to be the longest and hardest covered regularly in one day by any dry goods house in the city. It is from 63 to 67 miles long and averages 150 stops for deliveries, sometimes running up to nearly 300 deliveries.

In covering this route, the *Greyhound* leaves the store in New York City at 8 o'clock in the morning, crosses the Brooklyn Bridge, and thence runs out Fourth avenue to Sixtieth street, where deliveries begin. From there it goes to Fort Hamilton, making deliveries along the way, returns to Dyker Heights, then does part of Borough Park. From Borough Park, it delivers all the way down to Bath Beach, taking both sides of the main line, thence through Bensonhurst to Ulmer Park and on down to Coney Island. It covers Surf avenue, in Coney Island, all the way to Sea Gate, at the westerly end. Returning, it goes to Brighton Beach, then cuts over to Sheepshead Bay and starts on the homeward trip, coming back through Flatbush, where it finishes its deliveries, and re-enters Manhattan by way of the Williamsburg bridge. The wagon usually reaches the garage at 7 p. m.

If there are an unusual number of deliveries to be made the driver is accompanied by a boy to carry packages, but otherwise he is alone. It is an enormous day's work to be done week after week, but the driver likes it because he gets back from his work about three hours earlier than when horses were used. One reason why it is possible to make so many deliveries on such a long route in so short a time is because, unlike the city routes, there are no stairs to climb to upper floors of flat buildings.



Characteristic Curves on Charge and Discharge of Nickel Iron Battery

When this route was covered with horses, two teams were used every day and hampers full of packages were shipped by express to Bath Beach, about midway of the delivery route, where the wagons called for the packages and began their deliveries. Very often the wagons could not start delivering until 10 a. m.

Details of the Car with Which the Test Was Made—The *Greyhound* is a one-ton wagon of the regular Lansden type. It weighs 2,460 pounds empty, without battery, and 3,660 pounds with battery; that is, the type A 6 battery weighs 1,200 pounds. The wagon averages about 11 miles an hour actual running time.

The smaller battery, type A 4, has been in use by the same house in one of its two-year-old Lansden 1,000-pound wagons since June 1. In order to test it out, it was first tried on the Coney Island route, already described. It covered 45 miles over heavy, muddy roads, making 175 stops for deliveries, before the battery charge gave out. This showed that it was incapable of serving this route, however, so it was put on the Bayonne route, running down to Bergen Point. It has regularly served this route ever since, covering an average of 43 miles a day and making 125 stops. The voltage reading of the battery after the day's work shows that it is capable of doing 50 miles a day under the same conditions. The wagon leaves the store about 8 a. m. and gets back to the garage at 5 to 5.30 p. m. It is not given any boost during the day—in fact, the drivers are not allowed to boost the batteries in any of the cars. This small battery contains 65 cells and weighs very close to 700 pounds.

Various characteristics of the new battery are commented upon by the superintendent of the garage and others connected with the management of the store under whose direct observation the work of the delivery service comes. The most important is the uniformity of discharge capacity regardless of the age of the battery as shown by the curves and table on this page. This is the chief characteristic, perhaps, of all Edison batteries, as the dry goods house has one of the early ones (type E 27) that has been in its service for nearly five and one-half years and is to-day regularly doing 35 miles a day. Practically no other work has been done on it in that period except to recharge it with potash every six months, and of course to keep the cells filled with distilled water. This quality, it is pointed out, is of great value, as it relieves the superintendent of deliveries of the mental effort of remembering the capabilities of each battery according to the time it has been in use, so that a battery capable of doing, say, 20 miles, will not be put on a route 30 miles long and get stalled.

EDISON CELL—TYPE "A 6"

Weight, 19.5 pounds

Charged 7 Hours at 45 Amperes		Discharge at 45 Amperes
Ampere-hour input	315.0	Ampere-hour efficiency..85.2%
Ampere-hour output	268.5	
Average P. D. of charge	1.692	Volt efficiency.....71.1%
Average P. D. of Discharge	1.202	
Watt-hour input	533.0	Watt-hour efficiency.....60.6%
Watt-hour output	322.7	

Output per pound.....16.54 Watt-hours.

Another quality is that the battery does not heat up much in charging, resulting in lessened evaporation and less frequent refilling. There is no testing with a hydrometer daily, and no use of acid, all that is required being the filling of the cells with pure water, as the potash does not evaporate. The reason for the lessened heating during the charging operation is said to be due in part to the large air space between cells.

Facts from Three Weeks' Service—During the three weeks that the Macy department store has the *Greyhound,* it was given severe tests over a number of different routes into the suburbs. For example, on April 16 it went to Coney Island, making about fifty deliveries, and on the same day, without recharging, it ran to Woodlawn and back. Then, to completely discharge the battery, it was run about 10 miles in nearby deliveries in the neighborhood of the store. The distance covered during the day was between 87 and 90 miles. The charging plug had been taken out at 8 a. m. and was not put in until 3.30 a. m. the following day.

On May 5 the wagon was sent to Morristown, N. J. Leaving the store at about 8 a. m., it covered 72 miles out and back, up hill and down, over macadamized roads, making forty-five stops, and returned to the garage by 9.30 p. m., or two hours before a team of horses would return to the stable in Newark after serving the same territory in Morristown.

On another occasion the Staten Island route was served, including Tottenville, at the extreme southerly end of the island. Owing to the hilly nature of the roads there it is asserted by the manager of the garage that 50 miles on the island is equivalent to 80 or 90 miles over level, smooth roads. Yet the wagon covered the route, making sixty stops, and returned, running strong, in five hours' less time than the same deliveries could have been made with teams of horses.

During the three weeks that Macy's had the wagon fitted with the new A 6 battery the machine was regularly put on the longest routes, serving suburban territory that is usually handled by horses or express. Besides the Tottenville route, which is 56 miles long, there was covered the trip to Richmond, also on Staten Island, 48 miles; Scarsdale, in Westchester County, north of the city, a round trip of 43 miles; Coney Island, and others, in regular rotation.

The wagon was regularly worked from 14 to 18 hours a day, according to the chief engineer of Macy's, and averaged from 56 to 57 miles a day on one charge, returning regularly still good for ten miles. It was regularly recharged at night for six to seven hours at a 40 ampere-hour rate.

Delivery experts state that the battery is easily capable of serving the longest and hardest route operated out of New York City and of surpassing the physical endurance of the driver; that is, no driver even with the aid of a boy, could drive the machine, day in and day out, over a longer route and make more deliveries than the *Greyhound* is capable of.

Those who have supervised the work of the battery are more than enthusiastic over it. They admit that the first cost is high, but to offset this, point out the low cost of mainenance

The Battery Details and Mechanical Make-Up—While the improved Edison battery has been under test for a long time in vehicles connected with the maker's laboratory, the sample batteries here discussed were put into commercial service so that the performances could be verified under the conditions of trade. Edison's new A type differs from the older Edison battery in the mechanical construction of the positive plate and in the substitution of pure nickel for the graphite formerly used. The general form has not been altered and the negative plate is still composed of nickeled steel boxes of rectangular section filled with oxide of iron. In the new positive plate, however, the active material is contained in nickeled steel tubes, about the thickness of a lead pencil and four inches in length. These are formed spirally out of strips of perforated ribbon steel, nickeled, and are reinforced by nickeled steel rings spaced 1-2 inch apart. The tubes contain alternate layers of nickel oxide and pure metallic nickel, loaded under pressure. The ends of the tubes are crimped, forming a flat at each end which is held fast to the frame of the positive plate by notched strips on the plate. The result is a very stiff plate which could be thrown across a battery room with very slight chances of even bending it. The electrolyte is composed of a 21 per cent solution of caustic soda as before. Aside from the cells, a new form of crate has been adopted with bent corners instead of dovetailed, making a very light and stiff construction.

EFFECT OF MOTORS ON LONDON STREETS

LONDON, July 2—An anti-motorist member of Parliament has questioned the president of the Local Government Board as to the "greatly increased" cost of road maintenance in London since the advent of motor traffic. The official reply silenced the questioner and clearly shows up one of the big advantages of horseless traffic. The following figures were given:

	Cost of Maintenance and Repair	Cost of Cleansing, etc.
1901-2	£745,461	£738,195
1903-4	771,490	724,213
1905-6	820,267	757,182
1907-8	745,501	723,790

The total length of roads here referred to has increased from 2,088 miles in 1901 to 2,162 miles in 1908. The substantial decrease in both maintenance and cleansing costs since the general introduction of motor vehicles some two or three years ago is so marked as to be well worth recording, placing the automobile, as it does, within the reach of a greater number of people.

CITY OF THE STRAITS FIRST ON THE LIST

Detroit has more automobiles in proportion to its population than any other American city, with the possible exception of Los Angeles. Supremacy in this respect is a mooted question, but there is no chance for argument when the natural advantages of the two cities are considered. Detroit has broad, well-shaded, well-paved streets that offer every inducement to motorists. Traffic regulations are liberal because of a keen appreciation of what the automobile means to the city. The parks and boulevards are always open to owners of machines, and if there ever comes a time when the motorist tires of riding around town he can drive out into the country in any direction and for a sum so small it would make a New Yorker gasp with astonishment enjoy a chicken dinner, feast on Detroit River whitefish, famous wherever epicures are found, or gorge himself on frog saddles such as only Detroit produces, and which have been eulogized at length by Eastern writers on more than one occasion.

ON DRIVING A CAR AT NIGHT

By D. R. Hobart

UNLESS one has had considerable experience in driving by night, and no matter how well he may know the road by daylight, he is often utterly at a loss to recognize familiar objects and will even pass the place to which he desires to go without being aware of it, when traveling over the same road after dark. Objects by the roadside have an unnatural appearance and seem out of proportion; what appears as a dark patch in the road may be either a pool of water or a depression, and light colored objects by the side of the road may even be taken for the road itself. The road, too, apparently disappears a short distance ahead and the autoist sets the brakes, only to find himself deceived. Due to the combination of deep shadows and strong lights with the general gloom of the night, all sorts of objects created in the imagination seem to spring up, causing doubt and anxiety. For comfortable night-driving as well as for the safety of the car and its passengers, powerful lamps are an absolute necessity.

Practice Essential to Proper Night-Driving—Recognition of familiar objects and accurate judgment of road conditions can only be acquired by practice. It is not necessary, to accustom one's-self, to drive night after night for periods of from six to eight hours on a stretch, as such long periods give rise to a high-strung and nervous state on the part of the driver. The first drive should not take over an hour and the autoist should be accompanied by a companion familiar with night-driving and the roads that are to be traversed. This companion should point out deceptive appearances and explain their true character, and in general act as an adviser. Unnecessary talking should be avoided by both as tending to distract attention from the work in hand. Subsequent drives can be of greater duration and on some of these the companion should not give instruction allowing the driver to take care of himself but acting when an emergency arises. As a general rule, no matter how experienced an autoist is in night-driving, there should be someone in the seat alongside to watch the road and the majority of drivers are only too glad to have such assistance.

Effect of Street Lights—Running in city streets or on lighted roads is of course much easier than running on dark roads, but in such cases the eyes are constantly accommodating themselves to the changes in light as the car approaches and passes a street lamp. With the powerful arc lights in use in many cities, the view will be obscured for a short time as the car passes out of the circle thrown by the light and a feeling of blindness will result, soon passing off, however, as the eyes adjust themselves to the change in quality of the light. It is due to this effect on the eyes that a number of the minor accidents occur at corners, not only to autos but to horsed-vehicles and foot-passengers. When emerging from light into what seems total darkness, as when leaving the last light of a city and going along the unlighted road, an involuntary sensation of being lost is experienced and even with powerful headlights the feeling of blindness occurs for a short time.

Goggles Not to Be Used Because of Reflections—Except when absolutely necessary, goggles should not be worn nor should the wind-shield be raised when driving at night, as the reflections from street-lamps or other sources of light on the glass surfaces of the goggles and shield appear as direct lights and obscure objects on the road, with unhappy results. A hint in this direction can be taken from the locomotive engineer who drives at night with the cab windows down to prevent any possibility of reflection, the only light in the cab, the gauge lamp, being placed directly in front of the gauge where no angular reflection is possible. Objects outside of the area illuminated by the lamps are almost invisible, so that care should be taken in making a turn or when passing a road-crossing. It would be well to have a movable searchlight fitted and this should be played on road crossings in both directions as the car approaches them, and on the road into which the car is to turn in order to illuminate objects not shown up by the headlights. Otherwise the searchlight can assist the headlights in illuminating a greater vertical area and give warning of dangerous objects at a distance.

Speed and Courtesy—Only a very reckless driver or one under the influence of liquor would drive a car at extreme speed at night. Not only would he endanger the other occupants of the car in so doing, but all other road users, especially those whose lights are not as powerful as his own. To be on the safe side and to accord fair treatment to all others on the road, a car should never be driven at such a speed as will necessitate the use of goggles or a wind-shield. Courtesy on the road does not disappear with the sun and because one has a powerful car and large lamps he is not justified in causing annoyance or injury to less fortunate users of the road. To the credit of the majority of autoists, most of the violations of courtesy are on the part of horse-drivers or other road users, a striking example being the moving-van driver who persistently occupies the crown of the road, thus preventing others from passing him, or who picks out the narrowest part of the highway as a suitable place to breathe his horses. The cattle driver with his herd occupying the entire width of the road and without any lights at all is another offender who constitutes an element of danger, in addition. Both of these must be watched for on summer nights and in localities where market wagons or herds are driven from one place to another by night, moderate speed is all that can be indulged in with safety. As in the daytime, the same courtesy should be extended to all other road users at night and it should be remembered that in case of accident, it will go harder with the autoist at night than if the trouble occurred by daylight.

The Lights of Traffic—Traffic on our roads is, unfortunately, noticeable in the main by the absence of lights of any description. Though nearly all States specify that all vehicles shall carry lights, the laws are honored more in the breach than in the observance. Most of the mishaps on the road at night are rear-end collisions, or as a result of endeavoring to avoid such collisions. When horse traffic carries any lights, they consist of either a pair of oil dash-lamps or a lantern slung under the running-gear, and none of these lights can be seen for any considerable distance. So whenever a faint light is seen ahead, the autoist should drive cautiously until the nature of the object bearing the light and its direction of travel if it has any is ascertained. In the majority of cases, the object will be a vehicle, although road repairs are often marked by a white lantern instead of a red one. As the autoist becomes experienced in driving at night, he will soon be able to distinguish the characteristics of the different forms of traffic; a large dark blotch signifying a wagon, small whitish spots in the near distance the faces of pedestrians, and a dancing "wil-o-the-wisp" effect a cyclist, the intermittent flashes being due to the reflection of the headlight on the plated parts of the machine. It is of course easy to know the direction of travel of a vehicle when red lights are seen on it as it is then moving in the same direction as the autoist. The absence of any light does not necessarily indicate the fact that no vehicle is present and this should be borne well in mind at all times.

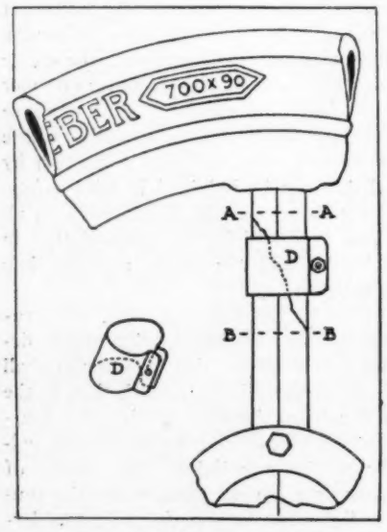
Lamp Equipment and Its Proper Positioning—For properly illuminating the road and objects surrounding it, the lamp

equipment should consist of one or two headlights, a pair of side-lamps, a tail-lamp and a swivelling searchlight, although the latter is not absolutely necessary in some cases. The headlights should be carried low down and well forward, not only to better illuminate the road but to cease to dazzle other road users. Each lamp should be set on the forks or bracket so that its principal rays will be thrown horizontally, and should be pointed directly ahead, especially if only one headlight is fitted, as the autoist unconsciously follows the beam of light in driving. The searchlight is usually mounted on a swiveling bracket on the dash where it can readily be moved by the hand. Side lamps rest in brackets on each side of the dash and act as auxiliaries to the headlights in illuminating roadside objects outside of the beams thrown by the headlights. In cities where the use of search- or headlights is forbidden, the side lamps must be depended on alone, and when any driving is done in cities fairly powerful lamps should be used. Side lamps are valuable in case of tire or other trouble, as they can be readily removed from the brackets to light up the work. The tail lamp should be placed out of the path of the exhaust so that the light will not be mysteriously extinguished and the fact called to the autoist's attention by the police, as is usually the case. An electric tail-lamp with a small bulb wired in series therewith so that the extinguishing of this bulb will indicate that the tail lamp is also extinguished is far better than the use of an oil light.

Benefits Derived from Driving by Night—When not indulged in to too great an extent, driving by night is beneficial in a number of ways. After the day's work it clears the mind and fills the lungs with fresh air. The rapid passage of the car gives rise to a sense of buoyancy and the reaction therefrom causes a feeling of drowsiness which makes the autoist sleep like the proverbial top. Especially is this the case with nervous persons or those whose occupation keeps them indoors for the greater part of the day. Driving at night should be indulged in in the warmer months of the year, as in the winter, driving in an open car is far from pleasant and may subject the riders to neuralgia or rheumatism. Driving in a closed car prevents the thorough enjoyment of the air currents, and while the mind may be cleared, it is, in the writer's estimation, but little superior to riding in a train or closed street-car.

LITTLE THINGS WORTH REMEMBERING BY THE AMATEUR

Temporary Repair to a Broken Spoke—Haste or carelessness in driving usually results in marring the paintwork, tearing the tires or damaging the fender, as when shaving a corner or making too short a turn and colliding with other objects in so doing. Sometimes more than paint and fenders are affected, a spoke in one of the wheels being broken or split so that safe progress is impossible. Where the autoist is unprovided with detachable wheels, as is usually the case, recourse must be had to some temporary binding or splint so that a repair—or wheelwright—shop can be reached. Such a break and a splint for keeping the broken ends in their proper relation to each other is shown in the sketch. A brass water connection collar, D, was bent into the approximate shape of the spoke by hammering it around the corresponding portion of another spoke, and after the broken ends were joined, the collar was put in place and the nut and screw set up. The collar held for some miles with careful driving, and in the opinion of the autoist who applied it, would have continued to keep the parts together for some time afterward. Where no such connection is at hand, steel wire wrapped around between AA and BB will answer for a very limited time, and very careful driving is necessary at that.



Clamp to Hold Broken Spoke

Recipes for Cleaning Leather Gloves—Ordinarily, soap and water are unsuitable for cleaning leather gloves more than once, as the scrubbing necessary destroys the dressing of the leather and causes a fibrous and untidy appearance which results in the deterioration of the article. An excellent solution which will clean with practically no deterioration consists of one drachm of sodium carbonate in one quart of milk, keeping these proportions only, however, as it is not often necessary to use such a quantity of mixture at any one time. The glove to be cleaned is put on the hand or on a wooden form and the solution applied with a piece of flannel, cotton or a wool brush such as comes with patent shoe dressings. After the stains or spots have been removed, the glove should be rubbed dry with a clean, soft cloth. Another method of cleaning employs Castile soap and milk, a cloth being dipped in the milk, rubbed on the soap, and the glove cleaned as before. Coarse soaps or those having considerable alkali should not be used on leather on account of the destructive action of the alkali and the effects of scrubbing as mentioned above. Under no circumstances should the cake of soap be rubbed on the glove, and it should be borne in mind that no dirty cloths nor rags whatever are permissible.

Cleaning Rubber Mats—Cars are frequently seen on which the brass and nickel plated parts are brilliantly polished but the rubber floor mats are dingy and greatly detract from the general appearance of the car, in consequence. An excellent method of keeping the mats bright is to give them an occasional coat of white or gray paint. Frequent scrubbing with soap and a brush is another means often employed, but while this cleans the mats the worn places look patchy, which is not the case when paint is used. White shoe dressing or pipeclay gives a smart appearance, but in wet weather the dressing gets pasty and is trodden into the floor-boards and cracks, where it is difficult to remove. If the mats can be cleaned daily, scrubbing with soap will answer unless they are badly worn.

A Deadener for Noisy Gears—When metal gears are run unhoused, the ringing noise which they make is quite noticeable, and if the gears are set too closely the noise becomes objectionable. As it is often inconvenient to stop and reset the gears, the noise can be deadened by rubbing the teeth and the grooves between the teeth with beeswax which has previously been warmed or well kneaded with the fingers. In a short time after applying the wax the noise will cease. The wax coating will remain on the gears for a considerable period of time, but the gears should be set properly in preference to applying another coating. Common bar soap, which contains a large percentage of wax, can also be used as a deadener.

Roadside Puncture Detecting Wrinkle—Small punctures in inner tubes are usually located by partially inflating the tubes and either immersing them in water or smearing them with soap lather, the puncture being indicated in either case by bubbles. On the road, the autoist is sometimes unable to procure a vessel suitable for testing the tube, but the tube can be laid in the dust and the puncture will be indicated by the blowing away of the dust at the point where the air leaks from the tube. This method requires no preparation, and is as sure as either the lather or water immersion methods, besides taking considerably less time.

LETTERS INTERESTING AND INSTRUCTIVE

HAS NUMEROUS TROUBLES

Editor THE AUTOMOBILE:

[1,940]—Will you please inform me through "Letters Interesting and Instructive" on the following points:

(1) Why does my 1903 opposed engine, 16-20 horsepower, under the body, on car which is chain driven, use up four gallons of water on a 16-mile run? Pipes do not leak more than two or thee drops per minute.

(2) Why does this same car, although the engine runs smoothly, seem to have a jerk or surging motion at irregular intervals? This begins as soon as the car gets under way and occurs at intervals of from fifty feet to a hundred yards and continues throughout the run, although it gets no worse, it gets no better. Brake bands and transmission bands do not drag, engine is lined up, and all bearings are oiled before starting. Chain also is not tight.

(3) Why does this motor, which is equipped with a popular carbureter, not give more power when the throttle is wide open than it does when almost closed? On the other hand, it is very sensitive to a slight spark advancement, with the throttle partly open.

(4) Why does this motor after being run three miles under normal conditions, continue to run after the plug is pulled out. This is apparently on one cylinder and will continue for a long time, after which it will reverse a couple of times before stopping. This condition prevailed both before and after the cylinder and piston had been scraped free from carbon. It also occurs before the water gets to the boiling point as well as after. Water circulation is by gear pump.

(5) What causes this car to make a tapping sound when speeded up with spark not too far advanced? Also, while going down grade and coasting with the clutch out the same noise is heard. If I take the clutch out while running along on a level road at a 15-mile clip, it is heard and also when the engine is shut down after running at good speed. SUBSCRIBER.

South Braintree, Mass.

(1) You say two or three drops as if you are not sure. In that case, might not the right figure be twice as much? It would seem as if this small leak accounts for the loss of water. Since hot water flows more freely than cold, might not your five or six drops per minute (cold) become even twice that when the water gets up to 190 degrees? Of course, there may be the possibility that you have a trapped passage in one or both of the cylinders in which steam forms, thus preventing the circulation of water, with the result that more steam forms and the water boils away very rapidly. This latter fault can readily be detected in the overheating of the engine.

(2) If your car were shaft-driven, a misplacement of one of the universal joints would account for the surging. As it is, a single stretched link in the chain might cause the effect you have noticed, or even an irregularity in one of the sprockets. The fact that it continues throughout a day's run without increasing or diminishing would seem to account for the trouble as located in either chain or sprockets.

(3) Your carbureter and power trouble sounds very much as if the spray nozzle had been raised too high, resulting in starving the engine at wide-open throttle and high speeds, while at low speeds and partly open throttle an excellent mixture is obtained and the engine runs very well and delivers lots of power. This is explained in full, with a drawing to illustrate the point, in the June 17 issue of THE AUTOMOBILE, in answer to letter No. 1919, which you would do well to refer to.

(4) In this case, you have one cylinder in which there is a projection. This collects the heat and ultimately becomes red hot. It then acts as an igniter and fires the charge, so when the regular source of ignition is cut off it continues to fire until the fuel is used up or until it loses its heat. As a very small projection will often cause this you will have to look closely to find it.

(5) The tapping sound might be caused by so many things that any suggestion we might make based on the facts that you have sent in would be in the nature of a guess. Being right on the ground and with the machine before you, you ought to be able to make a better guess than we could.

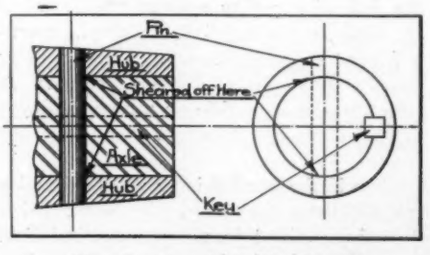
STAGGERING REAR WHEEL

Editor THE AUTOMOBILE:

[1,941]—Can you advise me through "Letters Interesting and Instructive" what would cause this trouble: The right-hand rear wheel "staggers" over rough pavement and very frequently I find the hub pin broken into three pieces. The key also wears very rapidly. The car is a Reo runabout. All other wheels are tight and as good as new.

Cleveland, O. A. A.

Your trouble, very apparently, is that the hub is loose on the axle, allowing it to move slightly in one direction and then in the other, when running over rough pavement. This alternate back and forth movement shears off the pin and makes the key loose. The remedy is to have the hub bored out large enough to allow of pressing a bushing into it. Then the latter should be rebored to axle size, allowing *not over* two-thousandths of an inch for clearance. This will be tight enough so that a few light blows with a hammer will be required to put it into place. Then a new key should be made which is a driving fit. As to the pin, have a new one made of a superior material, say, nickel steel. Then be sure that this is a tight fit also, and drive it into place yourself. If everything is tight, there can be no "wobble" or "stagger," which results in the sheared pins.



Showing How Hub Pins Break

ABOUT GARAGE FLOORS

Editor THE AUTOMOBILE:

[1,942]—I wish to garage a car in a stable which has a plank flooring. Owing to the fact that there is a cellar beneath the floor, it is not deemed advisable to lay concrete or any similar material thereon. Can you suggest any floor covering?

Norwich, Conn. H. R. FOLLETT.

The mere fact of there being a cellar below should not deter you from using concrete, which will make the best floor in the long run. Contrary to the usual idea, this need not be made very thick, an inch of neat or nearly neat cement being sufficient. This much cement will not be very heavy, so you need have no fear of the wooden floor standing up under the load.

Metal could be used, but has several very apparent disadvantages; it is heavy, expensive, noisy and hard to handle, which means a lot of hard work if you plan to cover the floor yourself. If metal was objectionable, and you did not mind adding a few inches to the thickness of the floor, brick laid on the side in cement could be laid cheaply and would make an excellent floor. Should you object to this thickness (2-inch), tile could be used in a similar manner, although this has the disadvantage that anything heavy dropped on it will break a tile or a couple of tiles. This means a nasty job replacing them.

There is a floor covering which is an asbestos paste, and can be put on in any desired thickness, one-half inch being recommended by the makers. This is sold under the trade name of Crown Sanitary Flooring by Robert S. Keasbey Company, 102 N. Moore street, New York City. It has the advantage of being easily and quickly applied, is water, oil and fire proof, can be had in any desired color, is seamless and practically indestructible. Probably this would answer your purpose.

NOISY TIMING GEARS

Editor THE AUTOMOBILE:

[1,943]—Perhaps some of your readers who have had experience with Ford runabouts of the 1908 type, or years previous, can suggest some way for lessening the noise of the timing gears. There may be some way of enclosing them, even though the arrangement would not be oil-tight, which would do away with the ringing noise.

Philadelphia. J. R. ZECKWER.

Just as a suggestion you might try the use of a fiber or rawhide gear in place of one of the metal gears now on the engine. This will doubtless eliminate some of the noise. This, too, would be an advantage in case you tried to enclose the gears with some form of sheet metal cover, as in the use of rawhide or fiber oil cannot be used, so the problem of covering the gears would be simplified. Readers who have been bothered in this same way are invited to write in and tell how they avoided the noise.

SARATOGA TO NORTH CREEK

Editor THE AUTOMOBILE:

[1,944]—Will you kindly publish in your columns a suitable route from Saratoga to North Creek. G. J. R.
Albany, N. Y.

Complete running directions from Saratoga to North Creek have not yet been compiled, but a fair idea of the route can be had by reference to the New York State volume of the 1909 edition of the "Official Automobile Blue Book" (page 3).

The route from Saratoga to Lake George, which was traveled and written new by the Blue Book Car in the Fall of 1908, will be found complete on pages 431-433.

As one leaves Lake George for the Adirondacks the road to North Creek is noted on the left. This will probably be traveled and written new for the 1910 Blue Book.

THERMAL EFFICIENCY

Editor THE AUTOMOBILE:

[1,945]—In your esteemed paper dated June 10 appeared an article entitled "Thermal and Combustion Efficiency of a Motor," by Prof. W. Watson.

In the paragraph headed "High Efficiency Very Noticeable" are given some figures on which I would like to have some enlightenment, as my own work gives me the following results:

HEMISPHERICAL COMBUSTION CHAMBER

	A	B	C
V	11.23	12.39	14.26
A	19.25	20.50	22.45
Ratio	1.72	1.65	1.58

These results I have reduced to cubic inches for convenience instead of using centimeters as Prof. Watson does. Now these differ very widely from his results, which were:

Ratio	.99	.94	.88

Will you kindly try to explain this wide difference? A. P. PLANT.
Los Angeles, Cal.

Professor Watson states that his is "a rough estimate of the surface area," so that it is possible that the area was not calculated as carefully as in your case. Even this would not account for the large discrepancy, so we are forced to conclude that your hemispherical combustion chamber is not a true hemisphere, but contains valve pockets and other extensions which increase the area relative to the volume. That this has some basis in fact you will notice from a review of the table in question. In the first part of his table, Watson gives the measurements of the engines under test, and for these finds ratios as follows:

A	B	C
2.01	1.86	1.69

It is with these that the hemispherical chamber is compared, and in his comparison, Watson says: "That this ratio could be very materially reduced is shown by the numbers given for a combustion chamber having no valve pockets, a hemispherical top, and a flat-topped piston. In such an engine the ratio of surface to volume would be only *one-half* what it is actually."

To repeat, your figures, coming midway between the figures for an actual engine and a theoretically perfect hemispherical chamber, lead us to think that you have not a true hemisphere, but incline more to the enlarged shape, which is more usual. All this, of course, providing that your arithmetic is correct.

Another idea is this: the area of the surface of a cylinder is greater than that of a hemisphere of the same diameter and equal volume. So any tendency toward a cylinder and away from the hemisphere adds to the surface area and consequently to the ratio. So it is barely possible that you have an engine of very low compression as compared with those used by Professor Watson. Lower compression means, of course, greater volume in the compression space, but this in turn means a greater departure from the spherical shape, with accompanying increase in the area. The last, in turn, raises the ratio. So, it may be that the only difference is that you have a motor with low compression.

It might not be thought that the compression pressure would influence the amount of area of the combustion chamber, and with it the ratio of volume to area, in this manner, but a few moments' thought will convince the most skeptical that this actually is the case. The above explanation, then, is the true one, and Plant will have to increase compression to improve the ratio.

ROTARY MOTORS

Editor THE AUTOMOBILE:

[1,946]—Can you inform me of any rotary or turbine motor such as is or can be used for aeroplanes or balloons, and if so, the names and addresses of the manufacturing companies?

What style of motors are used for the above purposes and what lengths of propeller blades are used? L. WOLFLEY.
Los Angeles, Cal.

As yet there have been no gas turbines perfected to the point of use in aerial craft. The engines used come in one of two classes, either they are of the V type or of the rotary type. If you will consult the back numbers of THE AUTOMOBILE you will find these treated very extensively. Thus in the January 14 issue the two types of engines are discusssed and compared, while the following rotary engines are described in detail: Eight-cylinder Farcot, seven-cylinder Clement-Bayard, seven-cylinder Gnome, and others. In the February 25 issue there is an article on a revolving type of two-cycle motor, which has but four rotating cylinders.

Then in the April 8 issue will be found a complete description of the work being done in England in the aeronautical line. Following this, the issue of April 15 gives the details of the seven-cylinder revolving Gnome engine, a French production.

Nearly all of these articles also treat of the sizes of propellers used, but as a general statement the size varies from 5 feet to 7 feet in diameter. The lower figure is seldom if ever surpassed, while the upper limit is usually not reached, either. The usual size of propeller blades, considering the difference in the various uses, is not far from the average of the sizes given above, namely, 6 feet. This is the exact size used by Curtiss on his aeroplane, described in THE AUTOMOBILE of July 1.

DIFFERENTIAL AGAIN

Editor THE AUTOMOBILE:

[1,947]—I notice your answer to No. 1,915. He asks about the effect of puting the slip joint of the propeller shaft on a quarter turn wrong. I gather that you assume the slip joint to be on the final driven member, in which case your answer would be correct; but I think from the surging he describes and from the very common custom of having the slip joint on the intermediate shaft that he has misplaced the slip joint on this shaft. The driving and the final shafts should be in parallel positions so the angles with the intermediate shaft will be the same at each end.

But there is a rather more necessary requirement than this. And single joint drives cannot get rid of it. This is the requirement that the forks at the opposite ends of the intermediate shaft, commonly called the propeller shaft, should lie in the same plane. If they do not there is uneven driving and the surging effect he mentions would likely follow.

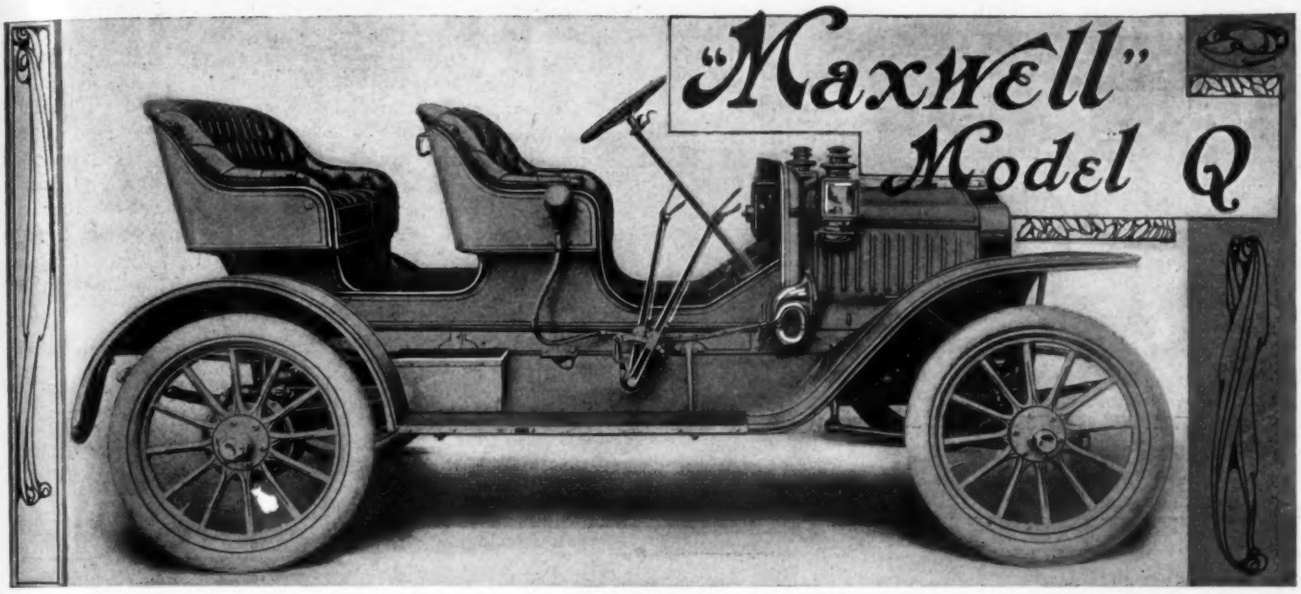
This is readily seen if we consider the first figure you published in the article. It will be easier if we assume the distances between the two parallel shafts to be much greater so as to increase the angularity of the intermediate B. The fork ends of A describe a circle about the axis of A and their motion, being steadied by the flywheel, is of a steady, angular velocity. The fork ends of B describe a circle of same size about the axis of B but with relation to A this is an ellipse. In a line at right angles to a plane through both shafts the two circles cross each other and at this point we find the long axis of the ellipse. Certain it is that when the fork ends of B are at this point they are moving as fast as the fork arms of A. But when they are in the plane of the two shafts, they are closer to the axis of A than at other times and are moving relatively slower. If the short axis of the ellipse is but half the length of the major axis, then at this point (the position shown in the figure) the fork ends of B will be moving but half as fast as the fork ends of A. Thus it will be seen that the speed of the shaft B at this point of a rotation is a matter of the angle between the shafts and is always slower than that of the shaft A. A quarter of a turn later and the fork ends of B are in a line where the connecting cross is squarely across the axis, and the ends of all four of its arms are moving at the same speed. At this point the shaft B must be moving with the same angular velocity as the shaft A. Therefore we find the shaft B accelerating for a quarter of a turn, then retarding for a quarter turn.

Now it should be apparent that the lower joint of B acts as a driver and has the same effect on the shaft C. That is if the angles are the same, as you correctly state. It should also be apparent that we can make the lower joint retard C while the upper joint is accelerating B. If we do this we get C rotated at the speed of A and the only irregularity of speed is found in the shaft B. This is very light and can vary its angular velocity quickly and without surging or grinding anything.

But if B accelerates C while being accelerated by A we get a doubled irregularity in C. This is decidedly bad. Twice in a revolution the engine is trying to force the wheels forward and twice it is trying to retard them. The flywheel is heavy and not easily stopped and started. The body of a heavy auto is still harder to move. The engine probably gets the effect most. It is a wonder that the gears and shafts will stand it. I have no doubt that many cases of defective gimbal joints and broken gears are due to this irregularity. And that the variation in engine speed can effect the mixture and firing is not too great to believe. The variation in motion becomes very perceptible if the angles are great. Yet many makers seem to ignore this matter as if it did not amount to much. Joint makers, who ought to know better, send out propeller shafts with the joints fitted wrong and no means for turning them right. Multiple drills are to be seen with this wrong arrangement although how drills can stand up at the fast speed if they are running at full speed when going slow I do not know. This is surely a case of going "steady by jerks."

With a single joint there is no remedy except to use a long shaft and so keep the angle slight as possible. The engine shaft should be as near in line with the propeller shaft as possible when under load.
Reading, Pa. CHARLES E. DURYEA.

As all of the matter above, or at least most of it, has been covered before, no comment is necessary. To those who find it difficult to follow the above, the figure will be found on page 987 of the June 17 issue.



WITH the gradual reduction in the price of small automobiles which came in response to the popular demand, has come an increase in the standard of material, construction and external appearance of these cars. The result is that a prospective buyer receives very much for his money. With this continuous "upward revision" of quality, accompanied by downward revision of prices, the buying public has begun to scan with care the details of each and every new model announced. So it is with the feeling of offering something out of the ordinary that the details of the new Maxwell model are made public.

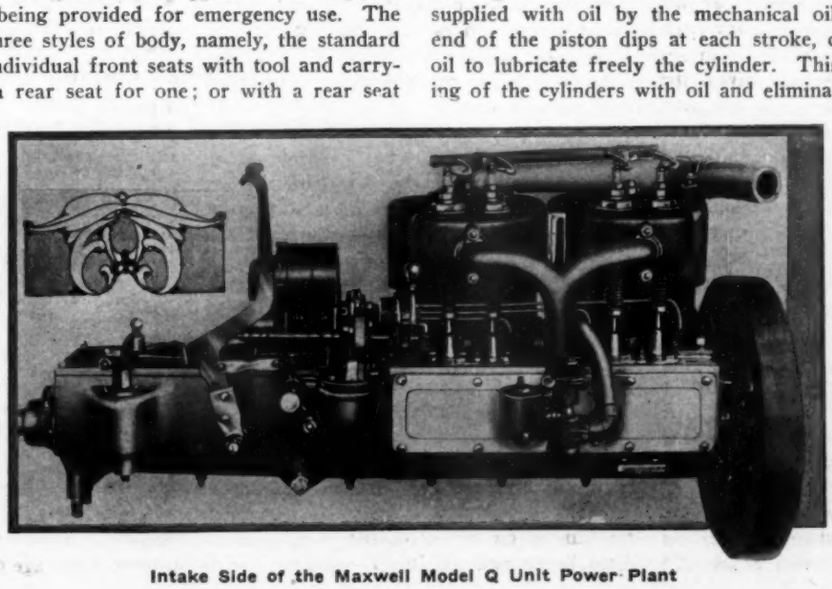
This is a four-cylinder car, rated at 22 horsepower, equipped with runabout body, and in its mechanical features including all of the pronouncedly Maxwell ideas, such as three-point suspension, thermo-syphon cooling and unit engine, clutch, and transmission construction. In fact, the new car, called Model Q, follows closely after the larger and more powerful Model DA.

A special feature of this new runabout is that it is equipped with a sliding-gear transmission giving three speeds forward and one reverse. This type of transmission, while used almost exclusively on large cars, has been considered heretofore too expensive to put on an automobile selling for less than $1,000. Heretofore runabouts selling at approximately this price have been fitted with planetary transmissions.

This new Maxwell Model Q will be equipped with a magneto, a set of dry cells also being provided for emergency use. The new car is put out in three styles of body, namely, the standard runabout type, having individual front seats with tool and carrying box in rear; with a rear seat for one; or with a rear seat for two. It is probable that this new model will be ready for delivery around the first of August.

What the New Motor Shows — The engine is of the four-cylinder vertical type, of 3¼-inch bore and 4-inch stroke. The cylinders are cast in pairs, the motor developing 22 actual horsepower at a normal speed of 900 R. P. M. The water jackets are cast integral with the cylinders. The valves, located on opposite sides, are interchangeable and exceptionally large. Both inlet and exhaust valves are mechanically operated. The tappet rods are of special steel, hardened and ground. The guides are of phosphor bronze. The cams are hardened and ground, and enclosed within the crank case, being thus fully protected and lubricated by splash. Three large bearings are provided for the camshafts, the shaft itself being hardened and ground. The crankshaft is of a special steel drop forging and finished by grinding. The connecting rods are of steel drop forgings, the bearings are a special grade of compressed babbitt. Throughout the entire motor simplicity and strength are the dominant features. The means of access to the connecting rods is provided on each side of the crankcase by plates which are quickly removable, thus exposing the rods for inspection or adjustment.

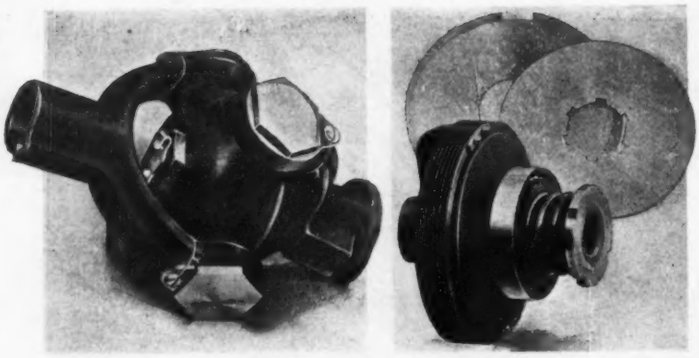
The lubricating oil is carried in a tank located under the hood; from this it is forced through a single sight feed located on the dash, whence the oil is distributed to each cylinder and to the clutch compartment. A nice feature in connection with this oiling system is a glass gauge which shows through at the dash so that the operator can at all times see the amount of oil contained in his oil tank. In connection with the lubrication of this new model is a positive oiling device for each cylinder. An oil ring is fitted at the bottom of each. This ring is constantly supplied with oil by the mechanical oiler. Into this ring the end of the piston dips at each stroke, carrying with it enough oil to lubricate freely the cylinder. This device prevents flooding of the cylinders with oil and eliminates the tendency to carbonize. This particular feature is similar to that used on the larger and more expensive cars manufactured by this company.



Intake Side of the Maxwell Model Q Unit Power Plant

Natural Cooling System Utilized — The thermo-syphon cooling system which has always been a feature of these cars has been retained in practically the same form as that used on the 30 horsepower, four-cylinder model.

The carbureter is of the constant-level



Universal Joint and Disc Clutch Used on Maxwell Car

float-feed type. The needle valve adjustment regulates the amount of gasoline, the air being controlled by a simple adjustment at the top of the carbureter.

With the simplicity and compactness of the multiple disc clutch, together with its freedom from the usual run of clutch troubles, this form has been growing in popularity steadily. It is not surprising then to find this new model fitted with an all-metal multiple disc clutch. It consists of 15 saw steel discs, each disc being concaved about 1-32 of an inch, a construction which causes the clutch to engage very gradually, without undue slipping.

Suspension from three points, allowing as it does freedom for slight twisting, is used, allowing the frame of the car to be warped or twisted by the road inequalities without injuring the vital parts of the mechanism. By using the unit construction it is possible to enclose the clutch in an oil-tight compartment, the steel disks running continually in a bath of oil. This not only eliminates wear, but permits of the slipping of the clutch without injury to the plates. The thrust from the clutch spring is taken up by a large ball thrust bearing.

Transmission Is Included in the Unit—Not only are the engine and clutch included in this unit construction, but to make it complete the transmission also is made an integral part. This transmission is of the sliding-gear type giving three speeds forward and one reverse, direct drive being on third speed. Roller bearings of the latest improved type are used throughout. Gears are drop forged from special steel carefully cut and hardened. A feature of this transmission is the positive gear lock which prevents the shifting of gears when the clutch is engaged. This safety device precludes the possibility of gear stripping, as it is impossible to change from one speed to another without first releasing the clutch.

The drive is by a propeller shaft fitted with two self-oiling universal joints. The rear axle is of the bevel gear type and the gears are drop forgings made from special steel, carefully cut and hardened. Both the main drive gear and the drive pinion are exceptionally large. The drive pinion bearing consists of two roller bearings of the latest improved type. The models, which have been driven thousands of miles, have failed to show any perceptible wear on these bearings. These bearings are lubricated by a large self-feeding grease cup. The second feature in connection with this rear axle is a special thrust roller hardened and ground and fitted against the main bevel gear. This device holds the main drive gear firmly against the drive pinion.

The frame is of pressed steel and hot-riveted throughout. The springs are exceptionally long, the front springs being 32 by 1¾, and the rear springs being 36 by 1¾. Strut rods are placed between the rear axle and the frame so as to take the driving effort off the rear springs. The wheels are of the artillery pattern and of selected second growth hickory. The tires are 30 by 3½, standard clincher, wheelbase 93 inches; tread 56 inches.

Two sets of brakes of the internal expanding and external contracting type are mounted on the rear hubs. The internal brake shoes are of cast iron expanding on a steel drum. The external shoes are lined with a special asbestos lining and contract on the same steel drum. The brake dimensions are 1½ inches wide by 9 inches in diameter.

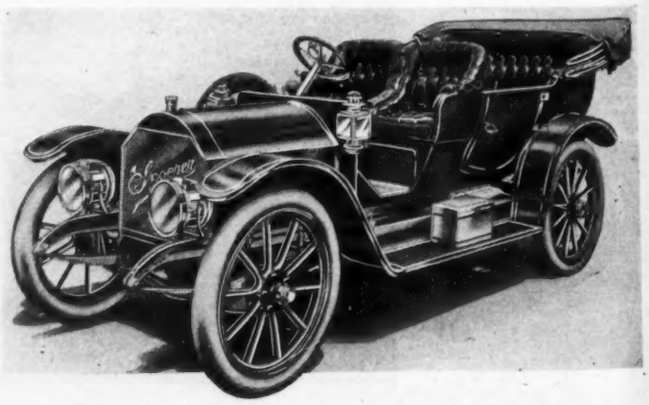
A single lever controls both the clutch and the external brake. The emergency brake also automatically releases the clutch. The spark and throttle are located on opposite sides and immediately under the steering wheel.

Metal Underpan Protects Vital Parts Efficiently—Thorough protection to the engine and transmission from mud and dust is afforded by a pan extending from the radiator to the rear end of the transmission. Metal extensions are also provided from the frame to the running board and from the frame to the fenders, so that the car can be driven through deep mud without splashing the body or the passengers. It is not generally conceded that this full underneath protection is as needful for the comfort of the passengers as for the working parts.

The body is made of sheet steel with moldings. This new model will be supplied with three styles of body: Runabout, rear seat for one, and rear seat for two. Upholstery is of high-grade leather and the best quality of curled hair. All cars will come ironed for top. The price of this new Maxwell model will be $850 for the standard runabout, $875 with rear seat for one, and $900 with rear seat for two.

PARTICULARS OF THE SPOERER FOR 1910

BALTIMORE, July 12—The new Spoerer 1910 demonstrating car, manufactured in this city by the Carl Spoerer's Sons Company, has proved substantial. Already it has been taken over all kinds of roads, up mountain sides and through stretches of mud, sand, clay, etc., for thousands of miles and no repairs have been necessary. The motor is four-cylinder vertical, rated at 30 horsepower. The cylinders are cast in pairs and are 4 7-8 diameter and 5 1-2 stroke. This is an increase over the size of the cylinders of last year, which were 4 1-2 by 5. The clutch is cone with leather face. The transmission is selectively operated and of the sliding-gear type. It has three speeds forward and reverse and is equipped with Hess-Bright bearings. The front axle is I-beam section, low drop, with Timken roller bearings, while the rear axle has a pressed steel housing, is clutch driven and of the floating type. The frame is of pressed steel of ample section. The powerful brakes are internal and external on each rear wheel. There are two separate systems of ignition, both battery and magneto. The lubrication is positive gear driven and the oil goes direct to bearings. The tires are 36 x 4. Goodrich q. d. rims. The springs are semi-elliptic front and full elliptic rear. Steering column, worm and sector, with mahogany wheel. The side levers are of manganese bronze I-beam section, while the radiator is of the honeycomb type, Mercedes pattern. The cars are made with limousine and landaulet bodies as well as touring car and runabout types. The wheelbase for the five-passenger car is 117 and for seven-passenger vehicles 124 inches. The car has a gasoline capacity of 18 gallons with pressure feed. The equipment includes side and tail lamps, horn and tool kit, together with the foot rail, robe rail and mats.



Spoerer Car Is Modeled After the Mercedes (German)

SIXES seem to have the call in the line of big cars now; at least, the number of announcements of this type seem to be in greater number than those of any other, unless it be the small car with the block motor. This being the case, one cannot help but think that the Munch-Allen Motor Car Company, DuBois, Pa., has shown wisdom in deciding to adhere to that style to the exclusion of all others. This is the case, however, and the builders of the Keystone Six announce two models, both sixes, for the season.

These include a large and a small model. The former is equipped with a sixty horsepower engine, the cylinders being cast individually, with the valve on opposite sides. This form of construction allows the use of an unusually large valve, the advantages of which are too well known to require additional comment. In this particular engine they have a clear diameter of 2¼ inches, and are operated by means of harmonic cams. These permit of an unusual range of speeds, from the lowest, 125, up to the highest, which is 2,000 loaded. Even this may be exceeded as a speed of 2,318 revolutions has been obtained running the engine light. A range of speed like this gives a similar range of speed to the car, without changing gears, and aptly illustrates the flexibility of the six.

Nickel steel is the material of the crankshaft, 1⅞ inches in diameter and running on seven long and large bearings. These are of die cast bearing metal and are positively lubricated.

Two Distinct Ignition Systems—To make certain of always getting a spark, two separate and distinct ignition systems are fitted, the magneto, a Bosch high tension, and a timer as well. They fire the compressed charge in the cylinder through the medium of twelve spark plugs, all set into the inlet side of the engine. This position was selected as likely to reduce the chances of fouling the sparking points.

The engine is water cooled, with the water circulated through integral jackets by means of a large gear pump, gear driven as well. A large radiator of the tubular type, with square tubes, and of a very pleasing shape is employed to cool the water. Back of this is placed the rapidly rotating fan of six blades, belt driven from the camshaft. The whole comprises an unusually efficient cooling system, and one that is dependable as well.

Following the best foreign practice, a multiple disc clutch is used to transmit the engine power back to the transmission. This is enclosed in a drum bolted to the rear side of the flywheel. Thirty-two conoidal discs are used, and run in a bath of oil. The enclosing of the discs gives this desirable feature of oil bath lubrication at all times, and by making the case dust proof an additional point is gained.

Highest Grade of Materials Used—The material of the transmission parts is symbolical of the material of the entire car, which is of the very highest grade obtainable. Thus, the gears and shafts are of chrome nickel steel, and are mounted upon Timken roller bearings of ample size. The gear box affords three speeds and reverse, operating on a selective quadrant. This gear shifting means is so interlocked with the clutch control that gears can only be changed while the clutch is out. This is a positive and perfect preventative of stripped gears, the bugaboo of many an amateur. Moreover, the interlocking is retroactive in that the clutch may not be let into engagement unless the gears are in mesh—that is, it prevents clutch engagement when the gears are out of mesh.

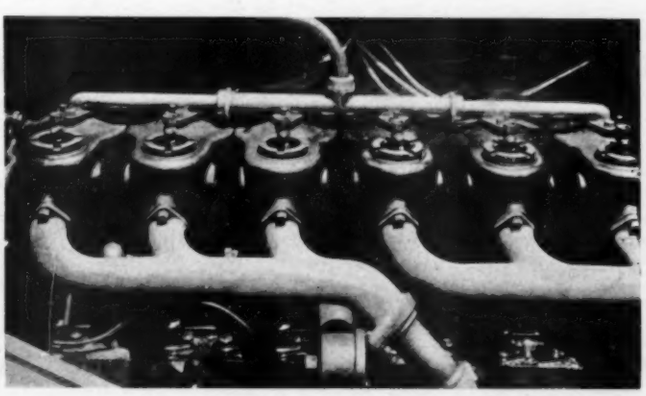
From the transmission the drive is through a single inclosed universal joint, and then through enclosed propeller shaft to the final reduction. This is a pair of bevel gears, of large diameter to insure smooth and quiet running. They are of four pitch and two-inch face. The differential is of the bevel style. Steering is effected by means of a worm and complete gear. The steering post is inclined at a small angle with the horizontal which gives the car a low, fast appearance. To this is fastened the steering wheel, 18 inches in diameter, constructed of aluminum, webbed for strength. On the steering wheel, upper side, are mounted the spark and throttle levers, these working on a stationary quadrant. Three foot pedals and the usual two side levers complete the control.

The right foot operates the service brake pedal, and the left the clutch, both pedals being made with adjustable pads, so that their height may be arranged to suit the physical convenience of the driver. A small toe pedal operates the accelerator, but this is only intended for use in close traffic and on rough roads. The inside lever controls the gears, and the outer, the brakes.

These last are of the internal variety, 14 inches in diameter by 2 inch face, working on large diameter drums bolted to the rear wheels. They are actuated through equalizers, which secure an equal pull on both brakes, regardless of road or other conditions. These also allow of unequal adjustments without disturbing the equality of the braking pulll.

With a wheel base of 122 inches the cars have a very long, roomy appearance. Large tires are used, 36 by 4 all around. The frame is of pressed nickel steel, narrowed at the front. Complete the six-sixty sells for $2,250, and is guaranteed for one full year against defects in material or workmanship.

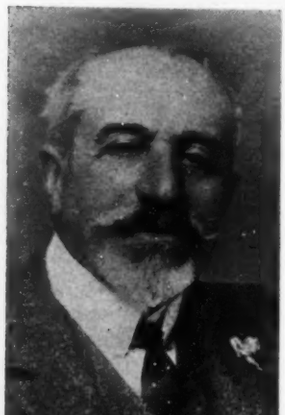
The company is also placing on the market a light six-cylinder car of the same high-grade materials and workmanship. This is equipped with a 35-40 horsepower motor, magneto, disc clutch, selective gear box, and will have 117-inch wheel base and standard tread, with 34 by 3½ inch q. d. tires on all four road wheels. The weight of the little car is but 1,900 pounds.



Keystone Six Engine Has Two Separate Exhaust Pipes

QUARTER MILLION FOR AVIATION PRIZES

PARIS, July 7—A shower of gold—no less than $240,000—has fallen on the aviation movement. Henry Deutsch de la Meurthe, who joined with Ernest Archdeacon in offering the $10,000 won by Henry Farman in 1907, is responsible for $100,000 of the amount just donated to the University of Paris. The gift has been made for the purpose of founding an aeronautical institute in France, under the control of the University of Paris. To this amount the donator has added an annual subvention of $3,000, and the University has supplemented this by a further subvention of $2,000.



M. Deutsch de la Meurthe

In addition to these amounts, a rich Greek, Basil Zaharoff, has offered the sum of $140,000 to the University of Paris, the revenue from which shall be devoted to maintaining a professor of aviation at the University.

The two generous donations do not please everybody, for a certain group of aviators have for some time been harboring the scheme of making an appeal to the French nation for several million francs to found a national aeronautical institute. Deutsch de la Meurthe and Andrew Carnegie were to be approached for large sums with which to head the list, and the public was to be appealed to immediately after the aeronautical races at Rheims next month. By these two donations to the University the public appeal practically becomes impossible, to the disappointment of those responsible for the larger movement, for they declare that the amount given is insufficient to do any real and lasting good.

ENGLAND'S BUGABOO NOT A GERMAN CRAFT

LONDON, July 7—Stories concerning a mysterious air craft that was seen by night in various parts of England, notably in Suffolk, have turned out to be true and the ship a reality, it belonging to Dr. B. M. Boyd, the managing director of a firm of motor engineers. The first time the ship was seen was on May 18, at Belfast. The doctor now admits that he crossed the Irish sea on that date. While the craft has not been examined, it is said to be a dirigible balloon 120 feet long with a cigar-shaped gasbag divided into three compartments and driven by a 300-horsepower motor. The doctor has submitted plans to the War Office and will increase the length to 200 feet and the power to 500 horsepower before giving any exhibition. Experiments in this direction have been going on since early in March, and Boyd says he has made a trip of over 300 miles without stopping. The recent scare concerning the unpreparedness of England in aeronautical matters has been mollified by this announcement.

NOTED AMERICANS TO ATTEND AERO RACES

PARIS, July 6.—Jefferson de Mont Thompson, former chairman of the A. A. A. racing board, after spending a week in Paris, has now left for an automobile tour through Germany, Austria and Holland, returning to France in August to be present at the Gordon Bennett and other aeroplane races to be held at Rheims from the 22d to 29th of that month.

Cortlandt Field Bishop, president of the Aero Club of America, is also in Paris at present, but will leave shortly for Rheims in order to occupy himself with the necessary arrangements for the reception of the Herring-Curtiss aeroplane to compete at Rheims and elsewhere. Mr. Bishop, who is interested in the Herring-Curtiss Company, declares he will enter the machine for every race in Europe, including the crossing of the English Channel.

LATHAM PREPARING TO CROSS CHANNEL

PARIS, July 7—Twenty miles of water seyarate France from England—twenty miles which will doubtless be crossed by a gasoline engine and a couple of artificial wings before the month is out. There have been numerous aviators possessed with a desire to connect the Continent with John Bull's tight little island, but up to the appearance of Hubert Latham none have gone from desire to acts.

The Frenchman with an English name—for Latham though descended from British stock is a fully fledged Frenchman—took lessons on an Antoinette monoplane a few months ago. He was possessed of extraordinary daring, and after a few flights he held the French record, only being eclipsed by Wilbur Wright in ability to stay in the air. While Wright, however, is the embodiment of caution, and would not attempt to cross the Channel under any conditions, Latham sees no danger in such a hazardous trip. Instead, therefore, of continuing his training over the plains of Chalons, he has shipped his machine to the neighborhood of Calais, and as soon as everything is in readiness and the weather is right will take his flight from the high French cliffs with the object of settling on the shores of England.

The machine he will use is a monoplane, built by the Antoinette Company, and engine by the same firm, the power plant consisting of a 50-horsepower, eight-cylinder, water-cooled engine. At Chalons the machine has shown itself possessed of remarkable speed and stability, its pilot performing evolutions with it that have never been attempted since Wilbur Wright demonstrated at Le Mans.

To cross the Channel it is only necessary to remain in the air 35 to 45 minutes, according to the strength of the wind. The distance, however, is not the greatest difficulty, Latham having already flown distances equal to three crossings of the narrow strip of water. It will be impossible to make the trip in a dead calm, even if advantage is taken of a calm for the start, while it remains to be seen if the aeroplane can battle against the strong winds which usually blow in the English Channel as successfully as the more moderate breezes in which it has flown over land. A service of motor boats will follow the aviator, while the French government will allow torpedo boat destroyers to lend assistance.

Comte de Lambert, the first of the Wright pupils, intends to make an attempt to fly the Channel, but will not begin the construction of his shed until July 15, flights, therefore, being impossible before the end of the month or early in August. Since the Wright brothers returned to the United States very little has been done with their machines, the only flight of importance being made on Wilbur Wright's old machine by Paul Tissandier, who remained in the air a little over an hour.

AERONAUT SAILS OVER NEW YORK CITY

New York City enjoyed a free circus stunt Monday morning. The star performer was Frank W. Goodale, assisted by his dirigible balloon. Goodale has been giving exhibition flights at Palisade Park, a resort on the New Jersey side of the Hudson, and on this occasion, the weather being favorable, he decided to visit the city. He crossed the Hudson at a high elevation to escape the cold air currents, and then, descending to about 100 feet, followed Broadway down to Times Square, racing with the trolley cars. What is more, he got back to Palisade Park under his own power, without having to call in the services of a ferryboat. That afternoon Goodale started for the Polo Grounds, hoping to see the ball game without paying admission, but a strong wind turned him back. Goodale is a pupil of Roy Knabenshue, who several years ago sailed from Central Park around the Flatiron building and back.

Glenn Curtiss, with the aeroplane which he flew successfully for the Aeronautic Society, made three short flights of two or three minutes each on the grounds at Mineola, L. I., Tuesday.

NAZARRO'S RECORD ATTEMPTS FRUITLESS

LONDON, July 2—The race meeting at Brooksland on Wednesday proved unsuccessful in its main feature—the record attempts by Nazarro on the big red Fiat. This monster, whose cylinders are said to exceed 190 mm. in bore, is far and away the most powerful car yet turned out from the Turin factory, and speeds in the neighborhood of 130 m. p. h. were anticipated. During trial spins a 120-mile an hour gait was recorded for several laps, but a defective cylinder prevented 110 miles an hour being exceeded at the record attempts. The car was therefore withdrawn, but Nazarro, who certainly is not one to boast, states his confidence in the car's capabilities.

The Montagu Cup race brought out several Grand Prix cars, but finally a newcomer in the shape of a 70-horsepower Bianchi won with ease at an average speed of 84 miles an hour.

Both novelty and excitement were combined in the Taxi race, in which a score of the best-known British motorists were mounted on 12-14-horsepower Fiat taxicabs. The race was a close thing right through, Harvey du Cros, of Dunlop fame, beating Chas. Jarrott for first place by a couple of yards.

The Grand Prix sweepstakes proved another disappointment, for of the four entries Astley's Napier came to the line too late to start and Stirling's Brasier was stopped in mid-career with a fractured fuel pipe. The other Napier, driven by Baker White—who also owns the monster Fiat—won after a lengthy struggle with Rose's Weigel.

Several other handicap races were run off, one of these being won by an old De Dion voiturette which had been a contestant in the ill-fated Paris-Madrid race years ago.

Curiously enough, while the race meetings themselves have been singularly free from accidents during the past year, two unfortunate occurrences have taken place since Wednesday. Immediately after the last race of the day, Cook, riding an N. L. G. 7-horsepower motorcycle, was thrown off when traveling at over 70 miles an hour down the finishing straight. The pneumatic skull cap which he was wearing saved his life and his injuries were confined to a broken arm and sundry bruises.

The other accident occurred yesterday and was more seriouus. An amateur driver was trying the paces of Astley's big Napier and after coming along the finishing straight attempted to turn the sharp corner leading back to the main track. The car promptly rushed up the banking and overturned. The driver was almost unhurt, but the passenger was very badly injured.

GUINNESS STILL RUNS 8-CYL. DARRACQ

LONDON, July 2—Speed trials on the various beaches of the eastern and southern coast lines, once most popular, have lately been of rare occurrence, so that special attention was paid to the event promoted by the Yorkshire A. C. at Saltburn, on Saturday last. The numerous races for touring cars were well patronized, but, as usual, interest was centred on the performances of the racing cars. Of the "four-inch" cars, Colmore's Darracq did extremely well by averaging 67 miles an hour for the kilometer. Tate won the race for Grand Prix cars, his speed being just under 95 miles an hour. Finally came Lee Guinness, alone in the "free-for-all" class, with his eight-cylinder Darracq of Florida fame. The best of four runs over the kilometer averaged 120 1-4 miles an hour, the mean speed for the four attempts being 118 miles an hour. This is a European record, although not equal to the 122 miles an hour speed recorded by Guinness at Saltburn last year, but which was not recognized by the R. A. C.

SCOTTISH TRIAL AWARDS ANNOUNCED

GLASGOW, June 30.—The Trials committee have awarded the efficiency gold medals as follows:

Class A	10	H.P.	Riley	990	marks.
" B	18	"	Riley	977	"
" C	10-12	"	Humber	996	"
" D	14-16	"	Argyll	986	"
" E	16	"	Humber	995	"
" F	24	"	Vauxhall	995	"
" G	30	"	Adler	977	"

Total marks were 1,000 in each class.

The Scottish Cup, awarded to the car showing least fuel consumption for the whole distance, was awarded to the 38-horsepower Knight Minerva, with a consumption of .0224 gallons per ton-mile, equal to 44.6 ton-miles per gallon. In car miles this is approximately equal to 25 miles per gallon.

MONTREAL RACE ENDS FATALLY

MONTREAL, July 12—The danger of automobile racing on horse tracks was again exemplified at the second annual meet of the Canadian Automobile Club on the Blue Bonnets track last Friday. The victims were C. K. Batchelder, of Newport, Vt., and J. Twohey, of Montreal, driver and mechanician respectively of Lorne Hale's Stearns in the 10-mile open race. On the eighth mile the car swerved through the fence in attempting to pass a contestant, and both men were killed. The exact cause of the accident cannot be determined. Burman, on his Buick, won four of the nine events, and De Palma, after an ineffectual attempt to beat the mile record with the Fiat Cyclone, won the free-for-all. The track was in good condition, and there was a large crowd.

Orville Wright made two unsuccessful flights Tuesday evening at Washington, neither lasting more than a few hundred yards. The wind was unfavorable, and he could not get sufficient speed or elevation to direct his course satisfactorily. The second flight started more favorably than the first, but again Wright came to the ground rather than attempt the turn. This time, however, he did not stop the motor quickly enough, and the aeroplane came down with some violence, breaking the left runner. The injury will not delay the trials.

Competing Cars Awaiting the Call of the Starter at the Speed Trials on the Saltburn Sands, Yorkshire, England

THE AUTOMOBILE

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GREAT REVIVAL IN USE OF ELECTRICS

Of late a gradual tendency back to the electric vehicle for city use has been very noticeable. This was evident from the increasing number in use in the larger cities, in the returns from manufacturers, from the increasing number of communications dealing with the subject, and from other sources, none the less well-defined, though perhaps small.

Considering this, then, the reappearance of the "improved" Edison battery is probably very well timed, since the claims for this, less preposterous than some of its predecessors, are simply increased discharge per unit weight. Even this is admitted to be obtained at a rather large loss between the total charging and the discharge current. However, since tests of this battery, technically known as the nickel-iron cell, have shown a very superior output over the old cells, it may be well to look into the fact that this will have a large and favorable effect upon a branch of the automobile business now experiencing a marked revival. At the very least this should add impetus to that revival, and as time proves the truth of the first tests, and, perhaps, improves upon them, it may become a stepping stone to a greater electric vehicle business, both pleasure and truck.

The fault with the electric has always been limited range or the inverse, excess dead weight. The new nickel-iron battery, if it doubles the output for the same weight, will alter one of these. For limited distance use this will reduce the useless dead weight to one-half, and in cases where the weight is not so objectionable, placing it at the same figure as before, places the radius of obtainable action at double the previous mileage. Inasmuch as this has upon numerous occasions been set up to over 100 miles, doubling it would bring the figure up to about the maximum ordinarily obtained in a day's travel. This, then, would place the electric vehicle upon a par with its gasoline rival, a state of affairs long sought after and never obtained.

It is with bated breath, then, that the manufacturers and well-wishers of the electric car await future tests of the new nickel-iron Edison battery.

In so far as the electrical car, at best, must so conserve its energy as to attain the maximum result either of speed or mileage from a given weight of battery, anything which will conduce to an extension of that conservation is of immediate interest. So, it is that a new type of tire especially designed for use of electrical vehicles is worthy of mention. These are made with very thin walls and are of the single tube type, popularly called "hose pipe." They may now be had in the detachable form. The low speed, comparatively, at which electrics operate allows the use of these thin-walled tires with very satisfactory results. A combination of the low-wattage tires with the new nickel-iron battery should give to the business as a whole such an impetus as it has not received in many years, if ever. Both instances just go to show that the work being done upon electrical cars is of great value to the person who uses them.

FRANCE STILL LEADS IN AVIATION

While the Signal Corps officers at Fort Myer are anxiously waiting for the Wright brothers to impress on Congress the practicability of their aeroplane in the hope of securing a reasonably generous appropriation, word comes from France that the University of Paris has received endowments amounting to a quarter of a million dollars for the purpose of encouraging progress in aviation, and that, still unsatisfied, certain leaders in the new science hope to obtain an even larger sum from the government for the foundation of a special institute. Truly a contrast!

The sceptical attitude affected by Congress is fast making that body ridiculous. Years ago, when the Wrights were called indifferently "cranks" or "bluffers," the War Department laughed to scorn their proposals; yet it cannot really be blamed. To-day, after they have abundantly proved every claim and made themselves famous the world over, Congress still doubts. The incredulity of the War Department cost us the exclusive use of the Wright aeroplane. Congress may well profit by their lesson and save us what is left.

The United States has far more need of an aeronautical institute than has France. With the exception of the Wrights, who belong no more to us than to any other country, our inventors who have succeeded in lifting themselves off the ground by mechanical means might be counted on the fingers of one hand. In France they are numbered by scores, and, far from being copyists, they are constantly evolving new types and experimenting in new directions. For once Yankee ingenuity seems outdone, and Congress, instead of helping us regain supremacy in the science of the future, discusses the tariff on collar buttons.

DATE SELECTED FOR GOOD ROADS CONVENTION

MOST important to all concerned over the progress of good roads was the conference recently held in Cleveland. At this meeting of the American Automobile Association officials and the members of the Good Roads Board, the dates September 21 to 23 inclusive were selected for the Second Annual Good Roads Convention. This will also be held in Cleveland.

The United States Government has shown its keen interest in the beneficial results to be accomplished through the convention by delegating as its official representative Logan Waller Page, director of the U. S. Office of Public Roads. Co-operating also with the A. A. A. will be the National Grange, the American Road Makers' Association and all of the automobile organizations representing the various manufacturing interests.

Chairman Geo. C. Diehl, of the A. A. A. Good Roads Board and the National Convention Committee, Lewis R. Speare, president, and F. H. Elliott, secretary, of the A. A. A., and W. F. Bonnell, president of the Cleveland Automobile Club, were among those present at the conference. Among the other members of the National Convention Committee are James H. MacDonald, president of the American Roadmakers' Association; S. D. Waldon, president National Association Automobile Manufacturers; Alfred Reeves, General Manager American Motor Car Manufacturers' Association; Robert P. Hooper, ex-chairman A. A. A. Good Roads Board; Charles Thaddeus Terry, chairman A. A. A. Legislative Board, and N. J. Bachelder, president of the National Grange.

Governor Harmon of Ohio has consented to represent his State at this convention, and he will speak on the Good Roads in Ohio. Mayor Thomas L. Johnson, of Cleveland, will deliver the address of welcome. Congressman R. P. Hobson, of Alabama, will deliver an address on "National Aid and Post Roads." Among the other speakers selected for the tentative programme with their subjects are:

The National Grange and Good Roads—N. J. Bachelder, Master of the National Grange.

State Aid—James H. McDonald, State Highway Commissioner of Connecticut.

Economics of Road Building—Samuel E. Hill, President National Goods Association.

Road Situation in the United States as Compared with Foreign Countries—Logan Waller Page, Director U. S. Office of Public Roads.

Macadam Roads—A. B. Fletcher, Secretary Massachusetts Highway Commission, or some other speaker to be selected by the Massachusetts Highway Commission.

Bituminous Road Materials—Provost Hubbard, Chemist of the U. S. Office of Public Roads.

The closing day of the convention will be devoted to a series of important tests on macadam roads to determine the best methods of counteracting the dust problem, and there will also be practical demonstrations with different materials of road building conducted by Director Logan Waller Page. The Cleveland Automobile Club will take the delegates on a tour of inspection over the improved roads in the vicinity of Cleveland.

PREPARING BRIGHTON BEACH TRACK FOR RACES

BRIGHTON Beach race track had a hairbreadth escape from being parceled out into building lots this Summer. A gang of workmen were already busy tearing down fences when the Motor Racing Association, of New York City, announced that it had signed a lease for the property. This association, it will be remembered, conducted two successful meets on the track last Summer. For this Summer's events the turns will be banked and the homestretch widened, and the entire track will be rolled hard and treated with a dust-laying compound. A new field stand will also be erected.

The first meet on the restored track is scheduled for Friday and Saturday, July 30 and 31. It will include a twenty-four hour race, limited to sixteen entries. More than half this number have already been pledged, although the entry blanks have not yet been issued. On the opening day, July 30, a number of short events will be held, and also, if it can be arranged, a 200-mile race for cars not eligible for the twenty-four hour contest. Opportunities will be provided for cars of all sizes and descriptions to show their mettle. The long race will start Friday evening, ending Saturday in time for the usual half-holiday crowd. The management will endeavor to have an elevated express station established at the race track, to give convenient transit.

A. B. Cordner, of the Cordner Motor Car Company, will be chairman of the race committee, and will have as his assistant T. F. Moore, organizer of the Briarcliff race and manager of the races at Brighton Beach last year. Their headquarters are now open at 1540 Broadway, New York. Mr. Cordner intends to have the work of reconstructing the track pushed forward as rapidly as possible, so that entrants may have an opportunity for practice before the opening meet. The membership of the Motor Racing Association includes C. F. Wyckoff, handling the Stearns; A. B. Cordner, Acme; E. R. Hollander, Fiat; C. H. Page, Chalmers-Detroit; H. A. Lozier, Lozier; W. B. Hurlburt, Thomas; Paul Lecroix, Renault; H. S. Houpt, Herreshoff; C. A. Singer, Palmer-Singer; W. F. Sykes, Zust, and W. C. Allen, Allen-Kingston. The makes handled by the members are expected to form a nucleus and insure a good field, but the entry list is to be open to all without favor.

ATLANTA TO HAVE A TWO-MILE TRACK

ATLANTA, GA., July 12—Without the usual blare of publicity, a body of Atlanta men have for some time been working on a two-mile automobile race track, which it is expected will be one of the finest in the country. The Atlanta Automobile Association is in charge of the enterprise. According to Secretary E. M. Durant, $300,000 has been raised, and 500 men, with three steam shovels and 200 teams are now busied on the excavation.

The plans call for a track two miles in circumference, one hundred feet wide on the home stretch and sixty feet elsewhere, the turns to be scientifically banked. The track will be opened with a series of international races on November 9, during the week of the Atlanta automobile show and the New York-Atlanta endurance run.

PRESIDENT TAFT INVITED TO LOWELL

BOSTON, July 12—An invitation has been extended to President Taft by Governor Draper and other prominent officials of Massachusetts and the officers of the American Automobile Association to attend the automobile carnival at Lowell, Mass., during the week of September 6. President Speare of the A. A. A., whose home is in Boston, was one of those who signed the invitation.

COLUMBUS, O., ENCOURAGED BY SUCCESS

COLUMBUS, O., July 12—Because of the success of the races of the Columbus Automobile Club on July 2-3, it has been decided to hold another meet some time in September. The racing committee of the club is now at work on the details.

INCREASING POPULARITY OF AUTOMOBILE CONTESTS

By BENJAMIN BRISCOE, President, Manufacturers' Contest Association.

AT no time in the history of the American Automobile Association has there been such a demand for sanctions as this year. These sanctions cover every conceivable kind of tests, such as reliability tests, fuel economy tests, hill climbs and track races, both at long and short distances. The mere fact that an unlimited number of sanctions are being granted is not so interesting in itself, but it brings to mind the fact that there is a widespread demand for competitive events.

Each local event held is under more strict regulations than its predecessors, which goes to prove that each season's product is better than the last or else the cars could not make the wonderful showing which they do. Never has the self-propelled vehicle been given such rigid tests and exacting mechanical scrutiny. When an event is held the technical committees are made up of men who thoroughly know the car from the motor back to the differential, and the car of to-day must be mechanically right before it can stand an examination such as is given to the cars nowadays.

It seems to be the desire of the public to see all the competing cars "killed off," or, in other words, have rules so rigid that none can finish with a perfect score. This not only means more for the cars themselves if given a high percentage, but it encourages competition inasmuch as that no discredit falls on the maker if his car fails of a perfect score. Misery always likes company, and if there are not any perfect scores or few high percentages, those with lower scores do not regret entering, as would be the case if the rules were so lenient that several finished with no demerit marks.

With so many events being sanctioned from the Atlantic to the Pacific and from the Great Lakes to the Gulf of Mexico, it is evident that the motor car industry is in an unusually flourishing condition and that the public is interested in and believes that road and track events are good barometers for getting an idea of what the present-day car can do in competition with rival makes.

Judging from the interest taken in the various road and track events, it is evident that the public care more for fuel and reliability tests than it does for track racing, or, at least, track races at short distances. Any car can travel a distance of five or ten miles on a track at a good rate of speed. The public do not buy cars as a rule for speed, but for power and durability. Track events, unless those of 100 miles or such as the 24-hour race, do not bring out the staying qualities and endurance of the machine as do road events such as the Glidden tour or the three-day run of the New York Automobile Trade Association through the Catskills and Berkshires.

While thousands will flock to the racetrack to watch short distance racing, it is because of the fascination of seeing the racing cars whirl around the track at a great burst of speed. I doubt, however, if there are many purchases made on the strength of the speed developed in track races. There is no question but that sales are made through the results of fuel and reliability contests, as a car which can stand up under the exact mechanical examinations, both before and after the test, demonstrates to the public that if they can endure under the rigid regulations of the contest they will answer every purpose for touring under general conditions.

It seems to me that makers and the public should encourage and support all wholesome road endurance contests, as it not only demonstrates to the public what the car can do, but each event teaches the maker wherein he can make his product stronger and more durable.

FAST RACING IN SOUTHERN CALIFORNIA

Santa Monica, Cal., July 12—Two of the fastest stock car races ever run in this country were brought off here last Saturday in the presence of more than 50,000 spectators. They were held over a course 8.4 miles to the lap, and the good condition of the road is vouched for by the phenomenal times recorded. An Apperson "Jack Rabbit," driven by Harris Hanshue, won the $1,000 Dick Ferris trophy, covering the 202 miles in 3:08:03, at an average of 64.2 miles an hour. Bruno Seibel's Chadwick took second place, and a Stearns third. In the small-car race, at the same distance, Bert Dingley brought his Chalmers-Detroit across the tape in 3.38:35, winning the Leon Shettler cup.

MILWAUKEE PLANNING A SEPTEMBER MEET

Milwaukee, Wis., July 12—The Milwaukee Automobile Club has been advised that it cannot have the use of the State Fair Park track until after September 17, the closing day of the fair, and all plans for a meet before that date have been dropped. The annual meet, which will probably include Milwaukee's third twenty-four hour race, will be one of the biggest in the Northwest, as the club's racing board will hang up big purses and invite the leading drivers of the country.

BALTIMORE HAS TWO EVENTS SCHEDULED

Baltimore, July 12—As many Baltimoreans and Washingtonians are away from town during July and August, the Motor Car Racing Association of Maryland has decided to postpone its twenty-four hour race at Benning, D. C., from July 16-17 to September 10-11. The program will be as originally planned, including on the first day six stock-car races at varying distances and a ten-mile record trial, and ending with the long event.

RACES AT OAKLAND, CAL., WELL ATTENDED

San Francisco, Cal., July 12—In the races of the Oakland Athletic Club on the Emeryville race track last week Buick, Mitchell, Cartercar, Comet and Detroit electric carried off the honors before a large holiday crowd. Inefficient policing caused the death of a spectator who attempted to cross the track, with the usual result. The driver of the automobile was stunned, but not seriously hurt. Although the racing was not of the record-breaking order, it satisfied the crowd. The best event of the day was the ten-mile free-for-all, which Christianson on a Buick won from Cooper's Comet after a close and exciting contest.

STRANG CUTS THE FIFTY-MILE RECORD

Springfield, Ill., July 12—At the Illinois State fair grounds last Saturday Lewis Strang, driving a Buick, broke the world's fifty-mile circular-track record which he established at Columbus, O., recently. The new record mark is 52 minutes, 48 seconds, a reduction of nearly a minute. His fastest mile was made in one minute, one second. Strang, however, lost his five-mile race with Chevrolet, the latter's time being 5:51. The stock car races also provided some interesting contests.

COLUMBIA, S. C., SEES A HILL-CLIMB

Columbia, S. C., July 12—A good crowd turned out for the annual Fourth of July climb on Monticello Hill, and saw some close racing. In the event for cars under $1,500, McMaster's Ford carried off the prize, with a Buick and a Ford tied for second. An Aerocar driven by Gibbes won the free-for-all, a White taking second. An unusual and highly commendable feature of the day was that the trials were started on time.

FRANKLIN WINS BUFFALO'S ONE-GALLON ECONOMY

BUFFALO, N. Y., July 12—Howling success best describes the one-gallon fuel economy contest held by the Buffalo Automobile Club recently, for in this not only was a distinct winner evolved in each class, but a contest winner as well, the latter, the Franklin 1910 model, breaking all economy contest records at the same time. There were four classes, with a professional or manufacturer's division and an amateur's division in each.

These drew twenty entries, all starting, and all but one finishing, this one being so delayed by a puncture that it was impossible to finish within the scheduled time. A fine course had been laid out by the club officials, 16.5 miles in length, straight out Main street from the club headquarters to Williamsville. This made the round trip 33 miles, but in this they reckoned without their host, for six of the competitors started on the third trip, while the winning Franklin came within 4 miles of starting back over it a fourth time.

Driver Averell and the Winning 1910 Franklin Car

There were four classes, divided according to the new price classification, but Class B, $1,000 to $2,000, was the only one that filled properly, and it was in this class that the real contest was found, this furnishing the winner as well.

The latter was S. G. Averell, driving a 1910 model G Franklin, and when this car, weighing all told 2,498 pounds, went 46.1 miles on the allotted one gallon of gasoline, it broke the record held by the same driver with a 1909 model G Franklin, made in New York exactly two months previous. In the latter case Averell went 35.8 miles with a weight of 2,880 pounds, giving a score of 103,104 pound miles, or 51.55 ton miles. In the Buffalo run this record was 135,902 pound miles, or 67.95 ton miles.

A single-cylinder Brush made the second longest distance of the day, but owing to its very low weight, 1,432 pounds, the smallest in the contest, it was beaten in its class by Parkhurst's Reo, which went 5.8 miles less but scored 12,368 points more, equal to 6.19 ton miles.

Figures for the run compiled by John M. Satterfield, of the Buffalo club, show that the total ton miles were 646.5, which with gasoline at 15 cents per gallon makes the average fuel cost 4.4 mills per ton mile, and the lowest figure 2.2 mills per ton mile. The total passenger mileage was 1,785.2 on 19 gallons of fuel, which works out to an average cost of 1.59 mills per passenger mile. All of the cars were water cooled except the winning Franklin, and all had special tanks for the fuel.

WASHINGTON-BOSTON RELIABILITY CONTEST

WASHINGTON, D. C., July 12—The chain of newspapers owned by Frank A. Munsey, the publisher, is the prime mover in a reliability contest scheduled for the week of September 22-29. The event will be known as the Munsey reliability contest, and the route will be from Washington, D. C., to Boston and return, taking in Baltimore, Philadelphia, New York, Albany and Springfield. The contest has been sanctioned by the A. A. A., and the officials of that organization have expressed the belief that it will prove an important Eastern event, filling the gap caused by the running of this year's Glidden Tour in the West. Entries are now being solicited by the representatives of the Munsey papers. Two were secured in Detroit last Friday—a 1910 Chalmers-Detroit, which Joe Matson, winner of the Indiana trophy, will drive, and a 1910 Hudson roadster, entered by the makers. The pathfinding car will be the Chalmers-Detroit flag-to-flag car, which has just returned to Detroit from its strenuous trip.

CALIFORNIA CLUBS PLACING ROAD SIGNS

RIVERSIDE, CAL., July 10—Through the energy of the automobile club here in starting an energetic campaign to place legible signs on all the popular touring roads in its locality, the board of supervisors of the county lately became imbued with the same spirit of progressiveness and appropriated $1,000 for road signs. The Riverside Automobile Club will contribute another $1,000.

Rating	Make	Body	Class	No. Passengers	Driver	Weight Loaded	Weight Empty	Live Load	Av. Wt. Pass.	Time Started	Time Stopped	Elapsed Time	Dist. Miles	Mi. per Hour	Score	Ton Miles	No. of Cyls.	Rated H. P.	Carburetor	Piston Displ.	Ignition	Tires	Trans. Ratio High Gear	Observer
1	Franklin	Touring	B	4	Averill	2948	2156	792	198	2:04	6:04	4:00	46.1	11.5	135,902	68.0	4	18	Franklin	143.13	Bosch Mag.	Goodrich	3-1	Sherwood
2	Oakland	Touring	B	3	Bauer	2360	1984	376	125	2:14	4:48	2:34	36.7	14.3	86,612	43.3	2	20	Brush	159.04	Battery	Goodrich	4-1	McDonald
3	Overland	Toy Tonn.	B	5	Poppenberg	3216	2334	882	176	2:01	3:47	1.46	26.5	15.0	85,224	42.6	4	30	Shebler	226.18	Remy Mag.	M. & W.	3-1	Quinlan
4	Rambler	Touring	C	5	Carter	4023	3146	877	175	2:03	3:10	1:07	19.3	17.3	77,644	38.8	4	34	Shebler	286.27	Bosch Mag.	Fisk	3½-1	Caughtry
5	Mercedes	Touring	E2	5	Steinbrenner	4330	3456	874	177	2:20	3:12	0:52	16.8	19.4	72,744	36.4	4	30	Steinbrenner	298.62	Bosch Mag.	Michelin	3-1	Landshept
6	Reo	Runabout	A	4	Parkhurst	2016	1420	596	149	1:59	4:50	2:49	35.4	12.5	71,366	35.7	1	12	Reo	106.32	Stor. Batt.	Michelin	4-1	Geyer
7	Cartercar	Touring	B	5	Engle	3190	2410	780	156	2:09	3:40	1:31	21.8	14.4	69,542	34.8	2	24	Shebler	213.75	Battery	Goodyear	Friction Drive	Sherman
8	Cadillac	Touring	B2	4	Baker	3380	2792	588	147	2:15	3:47	1:32	20.2	13.2	68,276	34.1	4	30	Cadillac	226.18	Battery	Goodyear	3½-1	Bennett
9	Thomas	Touring	C2	5	Gortln	3966	3176	790	158	2:13	3:05	0:52	16.2	18.7	64,249	32.1	4	40	Holly		Battery	G.B.J.	3½-1	Denny
10	Interstate	Touring	B	5	Sherman	3411	2611	800	160	2:10	3:38	1:28	18.7	12.7	63,785	31.9	4	35	Stromberg	283.72	Eisman Mag	Diamond	3½-1	Leonard
11	Brush	Runabout	A	2	Dussault	1432	1120	312	156	2:16	5:56	3:40	41.2	11.2	58,998	29.5	1	7	Brush	56.54	Battery	Ajax	4½-1	Brooks
12	Hupmobile	Runabout	A	2	Jones	1600	1270	330	165	2:02	4:03	2:01	36.8	18.3	58,880	29.4	4	16	Breeze	111.98	Bosch Mag.	G. & J.	3½-1	Strong
13	Buick Mod. 17	Touring	B	5	Whiting	3806	2968	838	168	2:16	3:15	0:59	15.4	16.0	58,612	29.3	4	30	Shebler	318.08	Remy Mag.	Michelin	3½-1	Gibbs-Hoover
14	Buick Mod. 10	Runabout	A	3	Lacy	2190	1717	473	158	2:05	3:28	1:23	26.1	19.0	57,159	26.6	4	18	Shebler	134.68	Remy Mag.	Michelin	3-1	Gannon
15	Maxwell	Runabout	A	2	Chittenden	1781	1430	351	175	2:07	4:03	1:56	31.6	16.3	56,280	28.1	2	10	Maxwell	100.52	Battery	Ajax	3½-1	Schalleau
16	Reo	Extra Runab. Seat	A2	4	Weiss	1968	1400	568	142	2:24	4:35	2:11	28.4	13.0	55,891	27.9	1	12	Reo	106.32	Battery	Michelin	4-1	Winegar
17	Maxwell	Small Tonn.	B	4	Munro	3124	2454	670	167	2:08	3:08	1:00	17.7	17.7	55,294	27.6	4	30	Maxwell	241.16	Splitdorf Mag.	Continental	3-1	How
18	Rambler	Touring	B2	3	Longnecker	2861	2468	393	131	2:00	3:15	1:15	17.1	13.7	48,923	24.5	2	18	Shebler	274.89	Battery	Diamond	3½-1	Schoenthal
19	Ford	Runabout	A2	2	Williams	1544	1240	304	152	2:19	4:24	2:05	30.9	14.8	47,709	23.9	4	15	Steinbrenner	120.76	Battery	Dunlap	3½-1	Engle
20	Overland	Runabout	B2	4	Frey	3025	2405	620	155	2:06	DID	NOT	FINISH	—	—	—	4	30	Shebler	226.18	Remy Mag.	M. & W.	3-1	Chesley

Table of Results and Details of Cars Competing in Buffalo One-Gallon Economy Contest

NEARLY 20,000 REGISTERED IN MASSACHUSETTS

BOSTON, July 12—All previous records for automobile registration in Massachusetts have been broken, for during the first six months of this year, ending June 30, more cars were registered than during the whole of last year. The total registration last year was 18,025, and on July first this year 19,322 machines had been registered with the Highway Commission. And the rush for certificates continues so strong that the commission is about 500 behind in the issuance of number plates, though its clerks are working nights. There has been little abatement in the demand from owners of cars, the number registered on the last day of the month being 121, while for the last two weeks in June the registrations averaged 86 daily.

It is figured that under the new law with the sliding scale plan of registration, the revenue from the same amount of business that has been transacted since January 1 of this year would be $100,000 greater. The Highway Commission estimates that about 54 per cent of the cars will pay the $5 fee, 25 per cent the $10 fee, 13 per cent the $15 fee, 6 per cent the $20 fee, and 2 per cent the $25 fee. On this basis the 19322 machines registered so far this year would pay $171,005 instead of $96,610. In addition there will be greatly increased revenue from licenses as they become annual.

The receipts of the automobile department have shown a corresponding jump and for six months are ahead of the total of last year, and nearly $23,000 ahead of the receipts for the first six months of 1908. Up to last Thursday morning there had been turned over to the State Treasurer by the Highway Commission for road maintenance fees aggregating $127,913.50, against $105,201 on the same date last year. In motor cycle registrations, manufacturer's and dealer's registrations and licenses to drive the figures are much ahead of last year, as shown in the following comparison for July 1, 1909, and July 1, 1908:

Registration	1908	1909
Automobiles	14,547	19,322
Motorcycles	1,492	1,872
Manufacturers and Dealers Licenses	359	461
Private Operators	3,212	4,855
Chauffeurs	3,444	5,037
Receipts	$105,201	$127,913.50

It is estimated that since 1903, when the first automobile law was passed, and in which the private operator's license was made perpetual, about 30,000 people have been licensed in Massachusetts to drive automobiles. There are approximately 7,000 licensed chauffeurs. Many tens of thousands of dollars will also be added to the State highway funds by the diversion of the fines received from motorists to the State.

Only a part of the new law is now in effect, but motorists are well pleased with the way in which it is working and believe that when the whole is in operation Massachusetts will have the best auto law ever put on the statute books of any State.

NEW BOOKS FOR AUTOMOBILISTS

"American Cyclopedia of the Automobile"—In the six volumes published under this title will be found not only a new and excellent method of treating the subject matter, but much that is new and different in the way of description of automobile parts. So full are the descriptions, that possessing one of these encyclopedias, one would have no further use for the numerous instruction books, troubles, diseases, and repairs being treated very fully in turn, under their respective heads. Of the six volumes, the first five are concerned wholly with cyclopediac matter, from the first definition of volume one, A. A. A., the abbreviation of American Automobile Association, to the last of volume five, Zylonite, same as Xylonite, another name for celluloid. The last, or sixth volume, is more on the order of interesting reading, for it is devoted to the history of the automobile, in which it is the most extensive that has ever been written. Following this naturally some space is given over to a description of the road and track races which have taken place, this being written in an historical fashion. A few pages are also allowed for an intelligent though brief résumé for the legislation pertaining to the automobile, while the windup is Study Helps. The latter consists of questions and answers, so arranged as to produce a steady, forward progress in the knowledge of the automobile from the very rudiments to the highest theory, and complete construction. The writers number the best men in the country, including Charles E. Duryea, C. P. Root, Thomas H. Russell and Victor Lougheed. It is being placed on the market by Bacon & Fynney, 121 Bolyston street, Boston.

"Accidents and Emergencies"—Everyone should have a book of this sort, not only automobilists, but everybody engaged in work around machinery, or wherever there is a liability of accident. The title and sub-title, a manual of the treatment of surgical and medical emergencies in the absence of a physician, indicate clearly the scope of the work. Into 200 small pages the publishers, P. Blakiston's Son & Co., Philadelphia, have crowded a wealth of valuable information on the subject of first aid. A brief glance at some of the chapter headings will give an idea of the worth of this little volume.

AUTOMOBILE CALENDAR OF EVENTS

Shows, Meetings, Etc.

Aug. 5-7.....Chicago, Midsummer Meeting Society of Automobile Engineers.
Sept. 21-23.....Cleveland, Good Roads Convention, American Automobile Association.
Nov. 6-13.....Atlanta, Ga., Auditorium-Armory, National Automobile Show.
Dec. 31-Jan. 7....New York City, Grand Central Palace, Decennial International Automobile Show; American Motor Car Manufacturers' Association, with Importers' Automobile Salon and Motor and Accessory Manufacturers. Alfred Reeves, General Manager, 505 Fifth Avenue, New York.
Jan. 8-15.....New York City, Madison Square Garden, Tenth National Show, Association of Licensed Automobile Manufacturers.
Feb. 5-12.....Chicago, Coliseum, Ninth Annual Automobile Show, National Association of Automobile Manufacturers. S. A. Miles, General Manager.

Races, Hill Climbs, Etc.

July 30-31.....New York City, Brighton Beach, 24-Hour Race, Motor Racing Association.
July 31.....Richfield Springs, N. Y., Hill Climb, auspices of the "Earlington."
Aug. 5.....Chicago, Fourth Annual Algonquin Hill Climb, Chicago Motor Club.
Aug. 26-28.....Minneapolis, "Little Glidden Tour," Minnesota State Automobile Association.
Aug. 19-21.....Indianapolis Motor Speedway, First Race Meet.
Sept. 6-11.....Lowell, Mass., Automobile Carnival, Lowell Automobile Club.
Sept. 15.....Denver, Col., Start of Flag to Flag Endurance Run to Mexico City.
Oct. 7.....Philadelphia, Second Annual Stock Chassis, 200-mile Race, Fairmount Park, Quaker City M. C.
Dec. 29-30.....Philadelphia, Fourth Annual Midwinter Endurance Contest, Quaker City Motor Club.

FOREIGN

Races, Hill Climbs, Etc.

Aug. 22-28.....France, Reims, Aeroplane Races and Grand Prix, Aero Club of France.
Sept. 5.....France, Mont Venteoux Hill Climb.
Sept. 19.....Austria, Semmering Hill Climb.

MASSACHUSETTS PARK COMMISSION RAISES SPEED LIMIT

BOSTON, July 10—Although exempted specifically from the provision of the new automobile law which annuls all local speed and exclusion regulations in Massachusetts, the Metropolitan Park Commission today gave evidence of its desire to assist in the cause of uniformity of automobile regulation in the State. The commission controls many of the main arteries of automobile travel in the suburbs of Boston, its boulevards and parkways being the favorite avenues of travel in and out of the city on nearly every side. Heretofore the maximum rates of speed have been fifteen miles on the principal parkways and ten miles on others, with many roads closed to motor vehicles. By an order issued today, to become effective August 1, the maximum limit is increased to twenty miles an hour, which is the same as the maximum under the State law. No intermediate limits, as in the State law, are made, the commission being convinced that it is better policy for it to enforce rigidly the twenty-mile maximum and depend upon the reckless driving clause of the general law to curb driving at improper speeds in the more crowded parts of the parkways under its jurisdiction. The new maximum limit applies to all roads under the care of the commission to which automobiles are admitted. The commission, however, makes it plain that it does not consider twenty miles an hour a safe rate of speed at which to drive around curves, across intersecting streets and upon certain parkways where there is heavy travel by pedestrians and vehicles. The park police will be instructed to prosecute drivers who drive their vehicles in a manner to endanger the public, no matter what the rate of speed.

In addition to increasing the speed limit, the commission has opened several more park roads to motor vehicles. These include the Lynn Fells parkway in Melrose, a new road entering the Middlesex Fells reservation, the great public park to the north of Boston, the border road in Middlesex Fells reservation, between the Lynn Fells parkway and Wyoming avenue in Stoneham, and the road in the Quincy Shore reservation to the south of Boston. Other parkways upon which the speed limit is increased to twenty miles are the Middlesex Fells parkway and Revere Beach parkway, the main automobile road followed in going from Boston to Lynn, Salem and the north shore; Neponset River parkway in Milton, Charles River parkway in Watertown, a favorite automobile route; Lynnway, another part of the north shore route; Furnace Brook parkway, leading to the Blue Hills reservation, the great southern park of the Metropolitan system; the driveway of the Lynn Shore reservation and the driveway of the Revere Beach reservation. Furthermore the hours at which automobiles are excluded from the Revere Beach reservation driveway, formerly from 2 to 11 p. m. on Saturdays, Sundays and holidays from June 16 to September 14, are changed to from 3 to 10 p. m., allowing autoists two hours more during which they may use this important link in the chain of parkways to the north of Boston.

With these concessions by the Metropolitan Park Commission a uniform maximum rate of twenty miles an hour is established in Boston and vicinity and practically throughout the State. The rules of the Boston Park Commission, limiting the speed on its parkways to eight, ten and twelve miles an hour, were made void by the new automobile law, and in the new set of rules prepared by this commission and now before the Highway Commission for approval, no provision is made as to speed limits. Other cities and towns have not shown a disposition to enact special speed regulations, though some have passed rules excluding motor vehicles from certain highways where their presence is considered dangerous. As a whole, they show a welcome desire to be fair and reasonable.

GEORGIA INTERESTED IN PROPOSED LAW

SAVANNAH, GA., July 5—Automobilists of this State are waiting with interest to hear the particulars of a State automobile law, which is being compiled by Senator J. D. Boyd, of Griffin. This, it is expected, will be introduced at the Capital in a very short time, and will provide for the registration, licensing and speed regulation of the cars. It will also probably arrange for the registration of automobile drivers, and the license number to be carried will correspond, for the purpose of identification. President F. C. Battey, of the Savannah Automobile Club, has drawn up a bill which will be presented to the Council of this city, to govern autoists while operating in the municipality. It will arrange for the licensing of everyone who operates an automobile, after they have been examined by a board of commissioners. It would be necessary for the applicant to show a sufficient knowledge of the rules of the road, and mental and physical ability to run a machine. The commission would also have the right to revoke a license of anyone convicted of speeding, or other improper conduct, upon two or more occasions.

STATE WILL NOT GRANT REBATES

COLUMBUS, O., July 10—In a decision rendered by Attorney General Denman of Ohio, upon the request of State Registrar of Automobiles, Fred H. Caley, it is held that the State law gives no rebate to motor car owners for the time after the end of the year. According to the law, every license expires on the last day of December and a new one is required after the first of the year. For instance, a person securing a license in October can only use it until the end of December. Mr. Caley said: "Some regard this as an injustice, but it is the only way in which the automobile department can be conducted on a business basis."

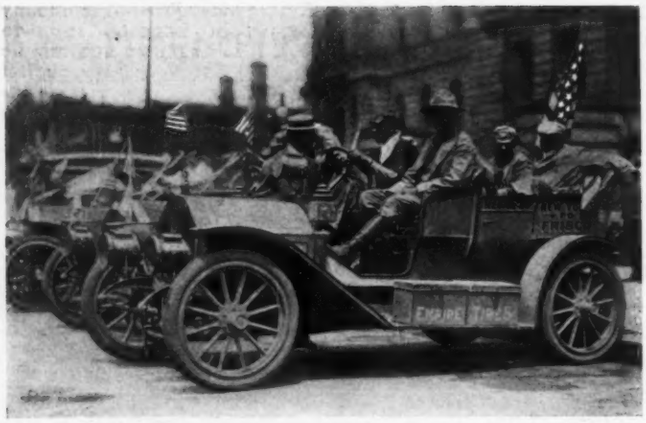
MOTORCYCLE COPS TO ENFORCE LAWS

INDIANAPOLIS, IND., July 12—Local authorities are giving much attention to the regulation of automobiles. Two ordinances are now pending before the city council and a third will be introduced next week increasing the motor cycle corps from two to six officers.

Pending ordinances require the registration of automobile drivers, for which an annual fee of $1 is to be charged, and prohibits the driving of cars by any one less than seventeen years old. The measure also requires the use of mufflers, lights at night when cars are left standing in the street, and prohibits the running of machinery while cars are standing unattended. The motor cycle corps is used for running down violators of the speed law. Two officials are employed in the work but after August 1 there will be six men.

CONNECTICUT CLUBS OPPOSE NEW LAW

HARTFORD, CONN., July 12—The Connecticut Automobile Association has just issued a circular letter setting forth a number of objections to the new law at present under consideration in the legislature. It is claimed that the law is unjust to automobilists in the matter of taxation, and that altogether it is so complex that even a lawyer cannot find out what it really means. It is the consensus of opinion that it would be preferable to retain the law of 1907 at present in force. This is substantially what various members of the legislature have hinted at all along. They believe that the law is inadequate and that it would be well to prevail upon the Governor to veto the measure. Automobilists are numerous and well organized in this State, and it is believed that they will be able to defeat the measure, and secure a longer trial for the present law.



The Transcontinental Regal Leaving Detroit

While in Detroit on Friday of last week the Regal car, which is after the coast-to-coast record, was the recipient of much attention from the visiting Gliddenites. The picture shows the Regal lined up with a number of escorting cars, ready to make its departure from the "City of the Straits."

REGAL TRANSCONTINENTAL LEAVES CHICAGO

CHICAGO, ILL., July 13—George D. Wilcox, in command of the Regal which is making a transcontinental journey as a demonstration test of the 1910 model, arrived in Chicago late Monday night and left Tuesday morning on the second leg of its trip. Seven days out of New York, the car has covered 1,152 miles, running on its prearranged schedule with a daily average of 164 1-2 miles. So far the car has suffered but two punctures to its Empire tires, both coming in the same tire. After a night's rest here, the Regal started at 11 o'clock from the *Motor Age* office, bound for Clinton, Ia.

GENERAL MOTORS ABSORBS CADILLAC

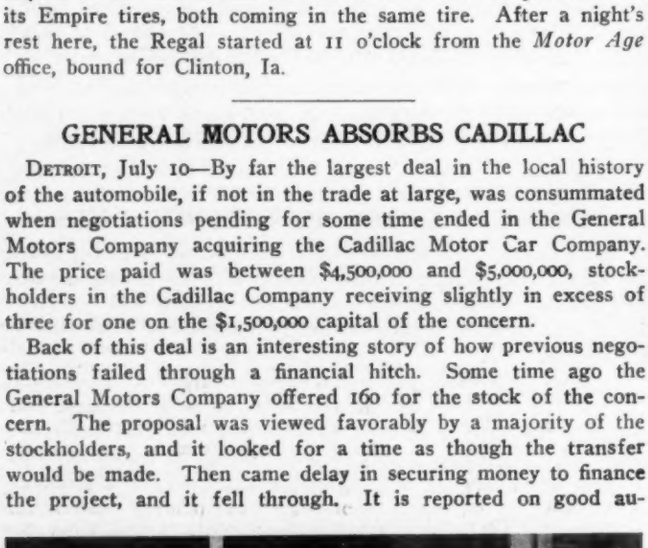
DETROIT, July 10—By far the largest deal in the local history of the automobile, if not in the trade at large, was consummated when negotiations pending for some time ended in the General Motors Company acquiring the Cadillac Motor Car Company. The price paid was between $4,500,000 and $5,000,000, stockholders in the Cadillac Company receiving slightly in excess of three for one on the $1,500,000 capital of the concern.

Back of this deal is an interesting story of how previous negotiations failed through a financial hitch. Some time ago the General Motors Company offered 160 for the stock of the concern. The proposal was viewed favorably by a majority of the stockholders, and it looked for a time as though the transfer would be made. Then came delay in securing money to finance the project, and it fell through. It is reported on good authority that the General Motors Company came back later with an offer of 200. In the meantime the Cadillac Company had been riding the crest of prosperity, and what would ordinarily be considered an exceedingly advantageous offer fell on unheeding ears. Then came the third attempt, which proved successful, and, incidentally, compensated the stockholders for the delay in closing the deal.

According to William C. Durant, chairman of the executive committee of the General Motors Company, and who conducted negotiations for that corporation, there will be no change in the management or factory organization of the Cadillac Company. The management of the company will be in the hands of W. C. Leland, with H. M. Leland acting in an advisory capacity.

The Cadillac Motor Car Company has one of the largest automobile plants in the world, and none is better equipped for the production of high-grade cars. Henry M. Leland, one of the founders of the concern, is a manufacturer of the old school, and under his direction automatic and time-saving machinery second to none has been installed.

The acquisition of the Cadillac Motor Car Company adds another to the string of factories taken over by the General Motors Company in the last few months. Those located in Michigan are the Buick Motor Company, Flint; Olds Motor Works, Lansing; Welch Motor Car Company, Pontiac; Reliance Motor Truck Company, Owosso; Rainier Company, Saginaw; Oakland Auto Company, Pontiac; Cadillac Motor Car Company, Northway Motor & Mfg. Co., and Motor Parts Company, Detroit.



Ten-year-old Mary Freda Brown at Wheel of Her Overland

This diminutive driver is the daughter of Will H. Brown, vice-president of the Overland Automobile Company, Indianapolis, and she has demonstrated repeatedly that she can handle an Overland with unusual dexterity. She recently drove her car in a parade in which 400 autos participated. During her trips she is always accompanied by her young brother Albert and the factory mascot, a pet dog called "Overland Bob."

Sir Lomer Gouin in his Six-Cylinder Stevens-Duryea

As was noted in last week's issue of "The Automobile," the popular Premier of Quebec was presented with the car shown in the above picture by admiring friends. Sir Lomer is seen raising his derby in the rear seat of the tonneau, while passing through the streets of Montreal.

ANOTHER AUTOMOBILE FROM INDIANAPOLIS

INDIANAPOLIS, July 12—To enter more strongly than ever the field for low-priced cars, the Empire Motor Car Company has been formed by prominent antomobilists of this city, notably A. C. Newby, Carl Fisher, James Allison and Robert Hassler. The concern has already started business in the Rumsey or old Mohawk bicycle works at West Twenty-ninth street and the canal, and the first two cars are expected to be finished early in August. The present work being done is mainly in arranging the machine shops, and preparing to handle the castings. The car will be marketed under the trade name of Empire, and will sell for $800. It will have a four-cylinder, 3½ by 4 inch motor, selective sliding gear transmission, shaft drive, a wheel base of 96 inches, and will be equipped with 32 by 3½ inch quick detachable tires. The company plans to make 2,000 during the coming year, and will begin an active campaign to establish agencies throughout the country.

Wausau, Wis.—John Fehl has leased the Liederkranz Building and will convert it into an up-to-date garage.

News in General

Rapid Fire Gun Mounted on Packard Three-Ton Truck Chassis

Packard as a Military Car—Foreign governments have been very active building automobiles to carry rapid-fire guns, but a test recently made in Cleveland was the first to be officially made in this country. The automobile used was a Packard three-ton truck, and the gun is said to be the largest automatic gun in the world. It fires three-pound shells at the rate of 100 per minute. Experiments were made with the brakes of the truck set and also with them released. In the first case the truck did not move and no shock was felt by those surrounding the gun on the truck platform. With the brakes released the recoil caused a slight movement of the truck. Lieutenant-Colonel O. W. Lissack, of the ordnance department of the United States Army, and Dr. S. W. McClean, the designer of the gun, were in charge of the tests, assisted by the Standard Automobile Company, the Packard Cleveland agent.

Spare Wheel Comes Handy—The Rambler spare wheel proved its adaptability, as well as usefulness, in an incident during the Crown Point races near Chicago. F. L. Winslow, of Riverside, Ill., was driving to the race in his Rambler, which has already seen two years of service, when one of his front wheels was struck by another car, shearing off all the spokes, and he was left stranded by the roadside. Some time later C. T. Jeffery, the general manager of the Rambler Company, came past in his Model 45 and at once offered his spare wheel. Although it was two inches larger in diameter than the broken wheel, the adjustment was made with little difficulty and Mr. Winslow was able to drive home in his own car.

Meiselbach Stays in Milwaukee—The Meiselbach Mfg. Co., of Milwaukee, Wis., has filed articles of incorporation, with a capital stock of $50,000. The company has been considering removal to Sparta, Wis., or Kilbourn, Wis., but has now decided to continue manufacturing its automobile trucks in its present factory at North Milwaukee. Up to this time the company has built trucks in limited quantities, mostly for the home trade, but with the backing of new capital it is expected to make an active entrance in the manufacturing field, with light delivery and commercial vehicles of all kinds, as well as heavy trucks.

E. V. Co. Resumes Operation—The plant of the Electric Vehicle Co. at Hartford, Conn., which since July 1 has been closed to permit the receivers to take an inventory, started up full blast last Monday. H. W. Nuckols, the newly elected general manager and vice-president of the Columbia Motor Car Co., which has taken over the business of the old concern, expressed himself most optimistically of the outcome and assures many refinements in the 1910 output. A good part of the creditors have already been paid a dividend of 20 per cent.

Factory for Vanguard Company—The Vanguard Mfg. Co., of Joliet, Ill., has purchased a tract of land adjacent to two railroad lines at Joliet and is erecting a 60x250 factory building of brick and concrete. The new plant will contain a brass foundry and other conveniences, and the company expects to have one of the most complete accessory manufacturies in the country. The 1910 line will include a new brass-frame windshield called the "Breech-Lock," for which many points of superiority are claimed.

Now the Thermoid Company—The Trenton Rubber Mfg. Co. of Trenton, N. J., has been authorized to change its name to the Thermoid Rubber Company, and will continue to manufacture their brake lining material known as "Thermoid," as well as other automobile goods of rubber. The company recently suffered a fire, but only the old part of the plant was destroyed. However, work is to be started at once on the erection of a new concrete structure.

Harris Oils Score Again—The A. W. Harris Oil Co. has received a telegram from the Chanslor & Lyon Motor Supply Co., its Pacific Coast agent, telling of another victory, this time in the Santa Monica race. The winning Apperson and the Chadwick & Stearns that took second and third places, as well as the Chalmers-Detroit, that won the light car race, all were lubricated with Harris oil.

Palmer-Singer to Have New Plant—The Palmer & Singer Manufacturing Company has filed plans for a new factory in Long Island City. It will be located on the south side of Webster avenue, between Second and Third. The construction will be of brick, three stories high, and cost $100,000.

A New Emergency Tire—A company is being formed in Laporte, Ind., to manufacture an emergency automobile tire of wood, and the necessary capital has been guaranteed. The device is intended to be fastened to the wheel to relieve a punctured tire. It is easily attached and can be manufactured very cheaply.

Factory for Elkhart, Ind.—Elkhart business men are planning a new automobile factory to be financed by local magnates, and it is reported that a building has already been leased. F. A. Howe, formerly superintendent of the Elkhart Motor Car Co., is said to be interested in the new enterprise.

Heinze Company Enlarges Plant—The Heinze Electric Company, of Lowell, Mass., maker of ignition appliances, has just completed an extensive addition to its No. 1 plant, making a welcome increase in its manufacturing facilities.

A. O. Smith Company Plans Enlargement—The A. O. Smith Company, of Milwaukee, manufacturer of automobile frames, has arranged to erect several new shops at a cost of about $500,000.

IN AND ABOUT THE AGENCIES

Maxwell, Chicago—J. I. Handley, district superintendent for the Maxwell-Briscoe Company in Chicago, has stated that contracts have been made for the erection of a branch house at Eighteenth street and Michigan avenue. The structure will be fireproof and thoroughly modern in every particular. Workmen have already started breaking ground, and it is likely that the whole building will be ready for occupancy on October 1. It will be four stories high, 80 by 163 feet in dimensions, and the main floor will be used for garage and salesrooms while the offices will be located upon the upper floors. The size of the building will give room for keeping cars in stock for shipment to outlying towns on rush orders, and for giving a more uniform delivery at all times.

White, Chicago—James E. Plew, who has been manager for several years of the White Company's business, has purchased the entire retail sales business of that concern, and will hereafter conduct it under the name of the "White Garage and Salesrooms." He is negotiating for a large building, the location of which has not been announced, but according to the plans, it will be the largest and best-equipped building for automobile purposes in this country. The White wholesale business will be conducted by W. J. Urquhart, as formerly, and its selling organization considerably strengthened to take care of the 1910 line of steam and gasoline cars.

Darracq, New York City—The exclusive American agency for the Darracq car has been secured by Henry Ducasse & Co., 140 West Forty-second street. According to the terms of the agreement, this company is to handle the Darracq throughout the entire country, not only the regular touring car, but also the taxicab, which has been such a success.

Oldsmobile and Oakland, Cleveland—A. A. Auble, Jr., and Fred Wood, formerly Akron, O., agents for the Oldsmobile, have taken the Cleveland agency for that car and for the Oakland as well, and will have the entire State of Ohio as their territory. "Andy" Auble drove a clean-score Oldsmobile in the Glidden tour last year.

Studebaker, Columbus, O.—A. J. Pray has taken the Studebaker agency for this city and has a garage in course of construction at No. 254-266 North Fourth street, which will be completed about August 1. A full line of both gasoline and electric models will be handled.

Hupmobile, Trenton, N. J.—F. C. Martin, who handles the Mitchell at his garage on East State street, has taken the agency for the Hupmobile for the entire State.

Hudson, Chicago—The Levy & Hipple Motor Co., now acting as agent for the Chalmers-Detroit and the Lozier, has decided to take on the new Hudson roadster.

Velie, Brooklyn—The Empire Garage, at 449 Madison street, has taken the agency for the Velie car, a newcomer in this city.

RECENT BUSINESS CHANGES

Franco-American Taxicabs — The Franco-American Taximeter Company has moved to new quarters at Seventh avenue and Forty-ninth street, New York, and will now take complete charge of its taxicab business, which has hitherto been in the hands of Lavalette & Company as rental agents. The new building contains a garage and repair shops, calculated to care satisfactorily for the fast increasing business. This company now has branches in Boston, Washington (D. C.), Chicago, San Francisco and New Orleans.

Carlyle Johnson Machine Company Moves—Necessity for larger quarters has required the makers of the Johnson friction clutch, the Carlyle Johnson Machine Company, to move to Manchester, Conn., nine miles east of Hartford. The new plant was occupied on July 1.

PERSONAL TRADE MENTION

Benjamin Whittaker has resigned the position of treasurer of J. H. Williams & Company, Brooklyn, makers of drop-forgings, and will now give his entire time to handling the exporting business of this company and others, with headquarters at 17 State street, New York.

Henry H. Hower is the new advertising manager of the F. B. Stearns Motor Co., Cleveland. Mr. Hower has resigned the automobile editorship of the Cleveland *Plain Dealer*, and W. S. Gilbert, formerly of the Cleveland *Leader*, has succeeded to the place.

Carl Kaufman, general manager of the Motor Car Equipment Company, 55 Warren street, New York, sails for Europe July 14. During his two months' stay he will visit foreign manufacturers and arrange for the handling of the latest creations in automobile accessories.

E. Leroy Pelletier has been made assistant general manager of the Studebaker interests and will, of course, make his future headquarters at South Bend, Ind. Mr. Pelletier's energies have been notable in the industry.

R. S. Drummond has taken the sales managership of the Detroit Steel Products Co., Detroit, which reports an unusually heavy demand for its motor car springs and drop forgings.

TAXICAB AND TRANSIT

Cabmen Secure Injunction—The independent cabmen of New York City, through their attorney, G. F. Holbert, have secured a temporary injunction restraining the drivers of the New York Taxicab Co. from picking up fares elsewhere than at their regular stands. The cabmen claim that, although only a small number of the taxicabs are licensed as "free-lances," they all nevertheless take fares wherever they find them, thus illegally injuring the business of the independents.

New Orleans, La.—Following a series of trails by the police department, the Abbott Cycle Company agents for the Studebaker car have delivered the new patrol wagon to the department and it has been put in regular service. The city authorities expressed their satisfaction over the adoption of the motor vehicle, which it has been desired to purchase for some time, but the appropriation therefor was not forthcoming until the last budget was made.

Andalusia, Ala.—Business men of Andalusia are interesting themselves in the proposal to connect their town with Pensacola, Fla., with an automobile line. As it is now it is necessary to make an all-day trip between the two places by rail, stopping over night in going via Florida. If the L. & N. Railroad does not put on a through train it is probable that an automobile passenger and freight line will be established.

Simplex Increases Capital Stock—The Simplex Motor Car Co., of Mishawaka, Ind., has filed articles giving notice of an increase in its capital stock, which in the future is to be $400,000.

RECENT INCORPORATIONS

Auto Parts Company, Chicago—Capital, $50,000. To do a general manufacturing business. Incorporators: B. Symonds, A. Symonds, F. W. Hartsberg.

Hartford Auto Parts Company, Hartford, Conn.—Increased capital from $50,000 to $100,000. Manufacturing automobile parts and specialties.

Northway Motor & Manufacturing Company, Lansing, Mich.—Increased capital from $100,000 to $250,000.

NEW AGENCIES ESTABLISHED

Regal: Roanoke, Va.—Model Garage, J. H. Marsteller, proprietor.

Jackson: Columbus, Ga.—Southern Automobile Company.

Waverley Electric: Houston, Tex.—Mosehart & Kellar.

Great Western: Peru, Ind.—Peru Automobile Company.

FISK ON TIRE TROUBLEITIS

The man who has changed tires in the broiling sun in summer and with half-frozen fingers in winter may be interested in some observations on tire troubleitis by one of the Fisk Rubber Company's experts. This specialist recognizes three forms of the disease, due to (1) poor tires; (2) improper sizes; (3) abuse. For the first the remedy is obvious. As for the second, one should not be afraid of getting too large a tire. It may look clumsy, but this is compensated for by its easier riding qualities. The tire manufacturer is blamed for many things directly caused by abuse of the tire, and the commonest cause is insufficient inflation. The specialist adds a few "don'ts" which may be instructive. They are:

Don't slide your wheels by locking your brakes.

Don't go around corners on two wheels.

Don't let your clutch in too suddenly.

Don't let your tires stand on oily places.

And above all keep your tires well inflated.

This is the sort of advice that cannot be repeated too often, and every autoist should remember.

RECENT PUBLICATIONS

Remy Electric Company, Anderson, Ind.—A most interesting little booklet from a pictorial standpoint, in connection with terse details, has been issued by the Remy Electric Company, describing a trip made with the Remy magneto. On November 3, 1908, A. T. Mosher and Harry Harter left Anderson for the South and they were gone until January, 1909, traveling over 6,000 miles of all kinds of country. They many times had to ford bogs and streams in the Florida everglades and like places, and although the battery on the car was submerged and silenced, they had no trouble with the magneto. It was under water many times and this test is a conclusive one. The pictures in the leather-bound booklet tell a realistic story.

The Auto Draft Company, Lake City, Minn.—For the autoist who runs over sandy or heavy roads, the Auto Draft will fill a long felt want. The device comprises a pair of drums which are attached or detached at will to special collars fitted to the hubs of the driving wheels, a cable and two metal anchor stakes. The drums fasten to the collars by an interrupted screw arrangement, the collars being bolted to the spokes of the wheels by means of clips. A car can be withdrawn from mud by anchoring the cable to the stakes and winding it on the drums attached to the wheels. The catalogue has a number of photographs showing the device in operation on a car in heavy sand.

Winton Sales Managers at Their Recent Convention at the Cleveland Factory